GUIDE TO SOFTWARE PUBLISHING:
AN INDUSTRY EMERGES

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EXECUTIVE SUMMARY

. The software publishing business, although only a few years old, has come to exercise considerable sway over the course of the microcomputer industry. In 1983 customers spent about $1.5 billion on microcomputer software. That sum was 13.4% of combined spending on hardware and software, up from 10.8% in 1982. Even after two more years of rapid growth, software isn't likely to amount to much more than 25% of combined hardware-software sales in 1985.

. The influence of software publishers does not derive from their size in revenues or number of employees. Rather, it stems from their ability to conceive of and produce programs that make computer owners more productive at work, or that enhance their education or entertainment.

. Understanding the dynamics of software publishing requires a careful delineation of how software resembles and differs from printed publications. Comparing software to board games, household tools or business machines may help pinpoint some of its key attributes. Among these are the long life of bestselling programs, the small number of programs required by most computer owners and the need to concentrate new investment on a few highly targeted products. In all these ways software differs markedly from certain segments of the book and magazine business.

. Software is created by authors and developers, some of whom work for themselves (particularly in the entertainment software field) and some of whom work for publishers (especially in business/professional software). Depending on whom they work for, creators either get salaries or are compensated by fees and advances against royalties. Royalties on bestselling programs can run into the millions of dollars, but advances for unknown authors are modest or non-existent.

. . In contrast to a developer, who turns a program over to someone else to market, a publisher takes the risk of having a program manufactured and offers it for general sale.

. The sales channels for software include: direct sales via mail order or through a sales force; sales through distributors; sales to retailers; and OEM sales or licenses to manufacturers. There are more than 20 independent distributors of software, of which the largest are Softsel and Micro D. There are more than 9500 retailers selling software. Computer stores are the most important channel; others are software stores, bookstores and mass merchandisers. Chains of company-owned or franchised stores are an important and growing feature of the computer and software store field. The leaders include

Radio Shack, ComputerLand, Entre Computer Centers, Inacomp, Softwaire Centers International and Software City.

. The three markets for software consist of consumer, educational and business/professional customers. In the consumer market, computers and software compete for a share of the more than $60 billion spent annually on media and information products; software in 1983 constituted less than 1% of this total, or about $500 million. Among the leading consumer software publishers are Sierra On-Line, Broderbund, Spinnaker, Epyx and Infocom.

. The education market was worth $38 million in software purchases in 1983. Most of the major elementary-high school publishers have entered the field, including SFN, Scholastic, Harcourt Brace Jovanovich, McGraw-Hill and Addison-Wesley. Software is unlikely to amount to more than 5% of instructional materials sales by 1986.

. The business/professional market is the major arena for software sales, which came to $936 million in customer purchases in 1983. Business spent $32 billion on computer services and $140 billion on all professional services in the same year, so the potential market for microcomputer software is enormous. Microsoft, VisiCorp, MicroPro, Lotus Development and Digital Research Corp. lead all business/professional software companies in revenues. Six leading business programs have sold more than 2 million copies, with unit sales ranging from more than 100,000 for "1-2-3" to 700,000 for "VisiCalc."

. Development, manufacturing and marketing costs are the largest expenses for microcomputer software companies. Development ranges from a few thousand dollars for certain game programs to $1 million or more for major business programs; as a percentage of revenues, development costs, including royalties, are between 10% and 25%. Manufacturing can be as low as 5% (for high-priced business programs) and as high as 25% (for low-priced entertainment software) of revenues. Marketing usually consumes at least 30%, and often 35% or more, of the sales dollar.

. Pretax profits for five publicly owned software companies range between 17% and 47% of revenues, with a weighted average of more than 40%. This high rate of profitability, which reflects the unprecedented success of Lotus Development Corp., can probably not be sustained in an era of increased competition and rising marketing expense.

. The future of software publishing is brightest in the business/professional market. However, the present oversupply of programs will inevitably lead to price cutting. That trend, along with higher marketing costs, means a much more difficult environment for software publishers than has existed up to now.

. Software publishers also face competition from new competitors, among them: companies in the mainframe or minicomputer software field, companies in business/professional publishing, companies from the entertainment industries, computer hardware manufacturers and companies in distribution and retailing. Competition from within--i.e., from programmers and developers who break away to form their own companies--is in many ways the most serious threat of all.

. Many technical and marketing changes are underway in the software business, spurred by technological advances in computer hardware and by a rapid evolution of distribution channels and marketing techniques. One of the most widely heralded developments is downloading or teledistribution of software--a fascinating technical innovation that for practical and economic reasons will not have much effect on the software business for at least several years.

. It is impossible to predict which software publishers will dominate the industry in the mid-1980s. But the successful companies will be those that have mastered the following dual challenge: 1) managing the development of new programs on an ongoing basis--including motivating and rewarding the developers; and 2) achieving a high degree of efficiency in marketing those programs.

1

INTRODUCTION

SOFTWARE PUBLISHING: AN INDUSTRY EMERGES

In only a few years, software has moved to the forefront of the personal computer industry. In the process, software publishers have come to exercise a guiding role in how the industry develops, and in determining the success or failure of individual computer manufacturers.

This assertion, widely acknowledged by hardware and software companies, flies in the face of economic logic. How is it that the software publishing industry can be so influential when sales of hardware far outstrip sales of software? In the higher priced personal computer market, for example, customers purchased an estimated $7.5 billion worth of computers and peripherals in 1983, compared to about $1 billion worth of software. In the low-priced home computer market, the disparity is nearly as striking: about $2 billion worth of hardware purchases, compared to about $500 million for software. And in the school market, the same preponderance of computer hardware purchases exists: about $180 million in hardware sales, compared to about $38 million in software spending.

Tables 1.1., 1.2, 1.3 and 1.4 summarize the key trends in, and economic size of, these three microcomputer market segments. It is clear that software is increasing as a proportion of total customer purchases of hardware and software. It is also evident that hardware sales will continue to far outstrip software sales for the foreseeable future. Figure 1.1 shows how the growth rate for software is accelerating faster than the growth rate for hardware, and how the proportion of software sales is increasing, even as the absolute gap between hardware and software purchases widens. By 1985, software could represent more than 25% of total microcomputer sales, up from only 6.2% in 1981.

Yet the true relationship between hardware and software cannot be grasped simply by comparing the dollar size of the two industries. The nature of that relationship was strikingly evident at the November 1983 Comdex trade show in Las Vegas. There, computer manufacturers showed a variety of new personal computer models. To cite just a few:

. IBM displayed its PCjr family computer (renting the entire Gold Room at

Table 1.1:
Personal/Desktop Computer Market Growth,
1981-83

	1981	1982	1983
Unit sales	440,000	900,000	1,600,000
Hardware purchases (000)	$2,500,000	$4,500,000	$7,500,000
Software purchases (000)	140,000	430,000	936,000
Total purchases (000)	$2,640,000	$4,930,000	$8,436,000
Software as percent of total	5.3%	8.7%	11.1%

Source: Communications Trends, Inc.

Table 1.2:
Home Computer Market Growth,
1981-83

	1981	1982	1983
Unit sales	300,000	2,000,000	3,700,000
Hardware purchases (000)	$ 120,000	$ 900,000	$2,000,000
Software purchases (000)	30,000	200,000	500,000
Total purchases (000)	$ 150,000	$1,100,000	$2,500,000
Software as percent of total	20.0%	18.2%	20.0%

Source: Communications Trends, Inc.

Table 1.3:
School Computer Market Growth,
1981-83

	1981	1982	1983
Unit sales	90,000	110,000	180,000
Hardware purchases (000)	$ 90,000	$110,000	$180,000
Software purchases (000)	9,000	21,000	38,000
Total purchases (000)	$ 99,000	$131,000	$218,000
Software as percent of total	10.0%	16.0%	17.4%

Source: Communications Trends, Inc.

Table 1.4:
Microcomputer Software Sales Compared to
Hardware Sales, 1981-83

	1981	1982	1983
Hardware purchases (000)	$2,710,000	$5,400,000	$9,500,000
Software purchases (000)	179,000	651,000	1,474,000
Total purchases (000)	$2,889,000	$6,051,000	$10,974,000
Software as percent of total	6.2%	10.8%	13.4%

Note: In calculating the totals for Table 1.4, hardware purchases by schools were not included, since they are already counted in sales of either personal computers or home computers. School software purchases were included in the totals, however.

Source: Communications Trends, Inc.

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Source: Communications Trends, Inc.

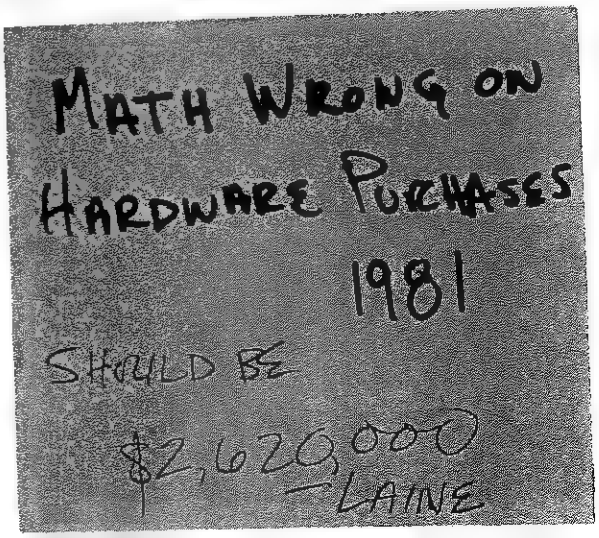
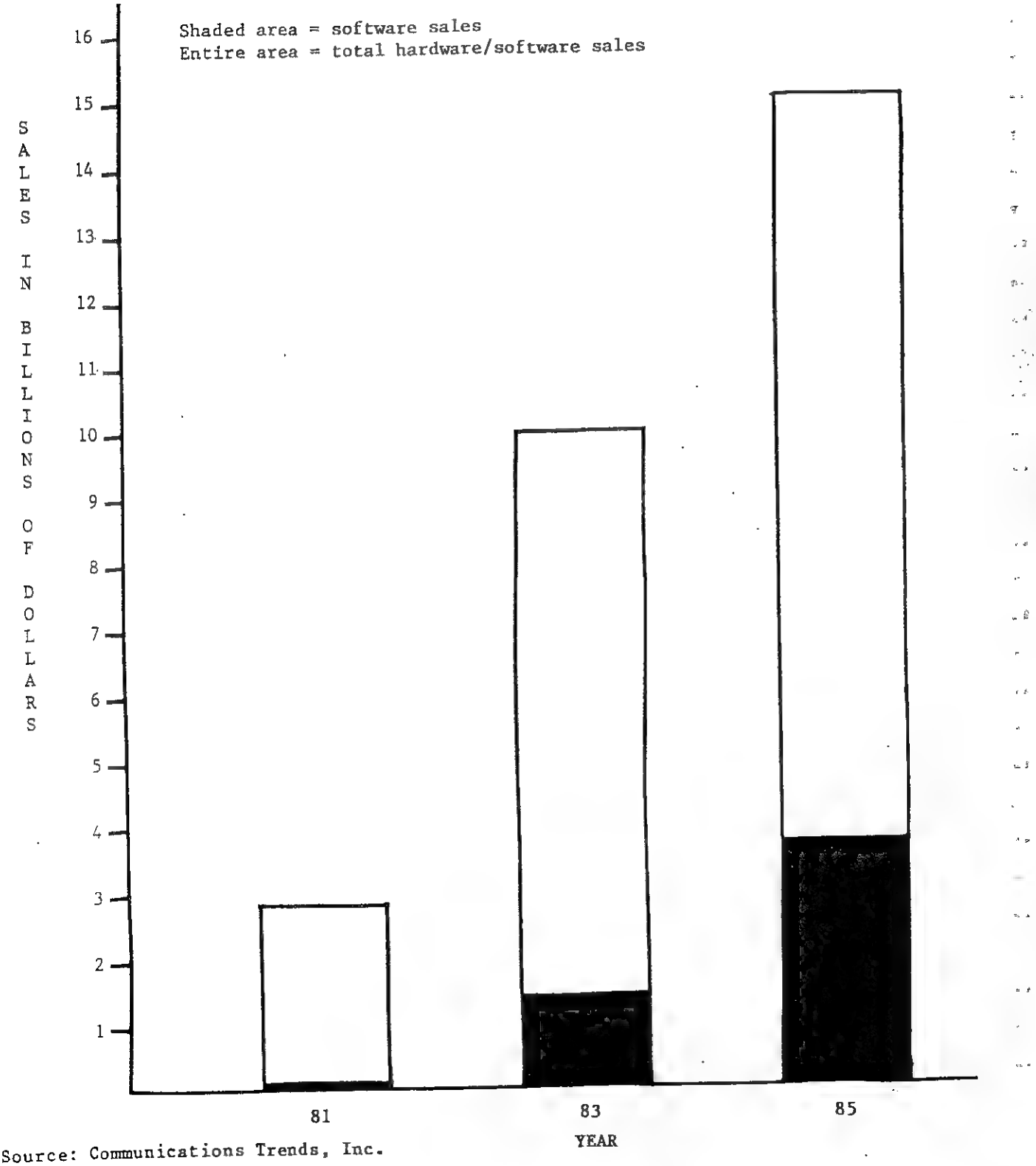


Figure 1.1:
Microcomputer Software Sales
Compared to Total Hardware/Software Sales,
1981-85



Source: Communications Trends, Inc.

the Convention Center to set up 72 of the new units for hands-on demonstrations);

. ITT announced its XTRA, an IBM PC-compatible, for shipment in 1984;

. Sperry exhibited its Sperry Personal Computer, also completely compatible with the IBM PC;

. Tandy announced its TRS-80 Model 2000, a new business computer that uses the MS-DOS operating system (standard on the IBM PC) and that can read files created on an IBM PC;

. Hewlett-Packard displayed its HP 150 touch screen computer that was introduced in September and that also uses the MS-DOS operating system.

The signficance of these new computers to software publishers was simple: In every case, the computer manufacturers were obliged--indeed were eager--to stress the range of software available for their machines from the day they were to be shipped.

In IBM's case, the computer giant distributed a chart listing more than 30 programs that would run on the PCjr. Some were brand new, like Sierra On-Line's low-cost word processing programming, "HomeWord." Others were popular business programs available for the PC, like "VisiCalc," "Multiplan" and "PFS:File."

ITT and Sperry also stressed that such programs as "1-2-3" from Lotus Development Corp., "Multiplan" from Microsoft and "WordStar" from MicroPro would be available to run on the new machines.

Tandy made a point of having representatives from Microsoft, Software Publishing Corp. (publisher of "PFS:File" and "PFS:Report"), Ovation Technologies (creators of a new line of integrated business software) and Softword Systems (publisher of the "Multimate" word processing program) at its press demonstration for the Model 2000. All these companies were involved in adapting their systems or applications software for the new computer.

Hewlett-Packard went a step further, announcing a software submission program for independent software companies, with the promise of HP equipment at substantial discounts and of online access to an HP software lab.

Every one of the new computers shown by these major manufacturers at Comdex was to use MS-DOS either as the preferred operating system or as a prominent option. And many of these manufacturers also planned to offer the new "Microsoft Windows" software, an enhancement of the operating system that permits users to run two or more applications programs at the same time by turning the video display into a series of windows, each displaying information from a different program.

So omnipresent was Microsoft at this most important of computer shows, and so necessary are its software products to the plans of various hardware manufacturers, that it can be argued that except for IBM, no company exerts

a greater influence on the course of the personal computer industry.

The situation of Microsoft may be exceptional among software companies, but the stars of several other software publishers are also rising. These include:

. Lotus Development Corp., the fastest growing software company and one of the spectacular entrepreneurial successes in the personal computer industry (from zero to more than $45 million in sales in its first 12 months).

. Infocom, whose text adventure games have opened up new styles of entertainment and diversion, moving away from shoot'em-up arcade video games to a form that has been called "the computer novel." Its bestselling "Zork I" has sold 250,000 copies in four years.

. Software Publishing Corp., whose PFS family of products has sold more than 300,000 copies in two and and half years, and which is likely to sell several hundred thousand more in 1984. The appeal of these easy-to-use programs to new computer owners is so strong that IBM, Tandy and Hewlett-Packard are all selling SPC programs for their computers.

. VisiCorp, which helped get the personal computer industry going in 1979 with "VisiCalc," the first--and still the most widely used--of the electronic spreadsheets. Its ambitious "VisiON" integrated software, shipped to customers beginning in October 1983, represents by far the largest investment ever made by an independent microcomputer software company in a single product--about $10 million.

. Spinnaker Software, the acknowledged leader in educational software for home, not for school, customers. Programs like "Snooper Troops," "In Search of the Most Amazing Thing," and "Face Maker" have undoubtedly boosted sales of lower-priced home computers by making parents feel that the computer indeed has an educational role, and will not merely be used as a game machine. Spinnaker's attractive and professional packaging and its concerted advertising have provided models for many other would-be educational software companies seeking to reach a mass consumer market.

. MicroPro International, whose "WordStar" continues to outsell all other word processing programs, and whose strong appeal has helped turn the personal computer into a writing and editing tool that rivals higher-priced, dedicated word processors.

THE CONTRIBUTION OF THE SOFTWARE PUBLISHERS

How is it possible for software companies like Microsoft, Lotus, Infocom, Software Publishing Corp., Spinnaker and MicroPro to be so influential when they are relatively small? In terms of staff, the largest, Microsoft, VisiCorp and MicroPro, employ 400 to 500 people. In revenues, the largest, Microsoft and VisiCorp, had sales of $60 million to $70 million in 1983. By comparison with the three largest computer manufacturers, IBM, Apple and Tandy, these numbers are almost laughably small.

As Table 1.5 indicates, total employment at the big three hardware companies is hundreds of times greater than employment at the largest software houses. Total microcomputer revenues of the hardware manufacturers dwarf those of their software counterparts. Even the software revenues of the three largest manufacturers outstrip those of the software companies. Estimates by Communications Trends, Inc. put combined microcomputer software revenues of IBM, Apple and Tandy at $238 million in 1983--$60 million higher than sales of Microsoft, VisiCorp and Lotus.

But the true measure of a software publishing company is not absolute size, but the influence and quality of its programs. This is comparable to the situation of a book publisher, whose reputation depends on its list of authors and its backlist of titles. A book by James Michener will sell a million copies, whereas a book by an unknown author barely sells 3000. (In other ways, however, software publishers are very different from book publishers, and one should resist the temptation to make facile comparisons. The differences will be discussed later in this report.)

The influence of the leading software companies stems directly from their ability to issue programs that appeal to customers, and that do the job for which they were intended (to entertain, in the case of games; to do work, in the case of business programs). Such influence is self-reinforcing: As software houses publish popular titles, they attract the employees, outside authors, capital and market position that make it possible to publish additional ones.

Although the computer manufacturers exceed the independent software companies in software revenues, the manufacturers' software business is actually built on programs created by independents. Without MS-DOS from Microsoft, "Multiplan" from the same company, "EasyWriter" from Information Unlimited Software, the Peachtree accounting programs from Peachtree and a host of other third party programs, IBM's microcomputer software revenues would be only a fraction of what they were in 1983. More to the point, its hardware revenues would also be significantly less. The contribution of the software publishers is imagination, entrepreneurial risk-taking, experimentation and the management of creative but idiosyncratic programmers and designers--all aspects of the software development process that large companies find troublesome, costly and/or elusive.

If any illustration is needed that hardware companies must have the cooperation of software publishers to succeed in the microcomputer business, the example of Texas Instruments can be cited. TI's software strategy for its TI 99/4A home computer involved controlling all manufacturing of its programmable cartridge; it was willing to license programs from outside developers in exchange for advances and royalties, but not to allow such companies to manufacture and sell cartridges under their own names. As a result, the most creative of the independents--Infocom, Sierra On-Line, Broderbund, Spinnaker and others--turned all their attention to other machine formats. Who could blame them: Why turn over programs to Texas Instruments and accept a 15% royalty, when they could manufacture programs

Table 1.5:
Largest Microcomputer Hardware Companies
Compared to Largest Microcomputer Software Companies,
1983 or Fiscal 1983

in total employment

Hardware Company	Employees	Software Company	Employees
IBM	365,000	Microsoft	500
Tandy*	27,000	VisiCorp	500
Apple	5,000	Digital Research	450
Total, 3 cos.	397,000	Total, 3 cos.	1,450

*U.S. only

in revenues (000)

Hardware Company	Revenues**	Software Company	Revenues
IBM	$39,000,000	Microsoft	$ 70,000
Apple	982,800	VisiCorp	60,000
Tandy	856,400	Lotus	48,000
Total, 3 cos.	$40,839,200	Total, 3 cos.	$178,000

**computer revenues only

in microcomputer software (000)

Hardware Company	Revenues***	Software Company	Revenues
IBM	$ 90,000	Microsoft	$ 70,000
Tandy	78,800	VisiCorp	60,000
Apple	69,000	Lotus	48,000
Total, 3 cos.	$237,800	Total, 3 cos.	$178,000

***microcomputer software revenues only

NB: All figures for Tandy are fiscal 1983 ended June 30; for Apple, fiscal 1983, ended September 30; and for IBM calendar 1983, estimated.

Source: Communications Trends, Inc., based on company financial reports, interviews, industry sources

for Atari, Apple, Commodore and other formats, and keep 100% of the wholesale selling price?

TI advertised its software heavily, but in truth what it had was program quantity, not quality. By its stubbornness, TI deprived itself both of a stream of high quality software and of the independent marketing and promotion efforts of third party publishers. This was by no means the sole cause of TI's failure in the home computer market, but it was symptomatic of that company's failure to grasp some of the underlying forces at work.

SOFTWARE BY MARKET AND TYPE

The markets for software can be conveniently divided into consumer, education and business/professional, depending on whether the purchaser is an individual consumer, an educational institution or a business or professional organization. These specific markets are discussed in detail in Chapter 3.

Software can also be divided into two basic types, according to what it does: systems and applications. Systems software consists of program instructions that control the operation of the computer and its related devices: disk drives, video display terminals, printers and plotters. Systems software includes operating systems, languages and utilities. Examples are the MS-DOS and CP/M operating systems for 8-bit and 16-bit microcomputers; Microsoft Basic II for the Atari 800; or Digital Research's "CBasic" for the Apple IIe.

Both home and business computers need operating systems and languages, which are either included in the price of the hardware, or are sold for a modest additional; i.e., MS-DOS sells for $40 for the IBM PC, which is a little more than 1% of the $3000 cost of a typical system.

Applications software consists of all the programs for accomplishing specific tasks on the computer, whether the tasks involve playing a game, doing spreadsheet calculations, learning fractions or keeping mailing lists. The biggest part of the applications software market consists of business/professional applications programs, as provided by companies like VisiCorp, Lotus, Software Publishing Corp. and Ashton-Tate.

SOFTWARE PUBLISHING BY MACHINE FORMAT

One of the trickiest aspects of software publishing is knowing which machine formats to publish for. Most software companies have dealt with this problem by holding back from releasing programs for a new format unless it comes from one of the most successful manufacturers, or unless the manufacturer assists in converting programs to that format. In the business market, the rise of IBM to a position of leadership has simplified the format decision: Everyone releases programs for the IBM PC first. As Table 1.6 shows, Apple and Tandy still had a larger share of the installed base as of year-end 1983, even though IBM led in dollar shipments for the year. One of the big questions concerns the ultimate success of two newcomers to the market, Digital Equipment Corp. and Hewlett-Packard.

Table 1.6:
Installed Base of Microcomputers by Type or Market, 1983

Category	Installed base	Leaders and market share	
Desktop/personal computers*	2,700,000	Apple:	44%
		Tandy:	33%
		IBM:	23%
Home computers	6,000,000	Commodore:	NA
		Texas Instr.	NA
		Atari:	NA
		Tandy:	NA
Education market	400,000**	Apple:	51%
		Tandy:	18%
		Commodore:	14%
Total	8,700,000		

*Figures on installed base and market share are for three companies only.
**All microcomputers sold in the education market are either desktop or home models; therefore the installed base of 400,000 is not counted again in the total of 8,700,000. NA=not available.

Source: Future Computing, Market Data Retrieval, Knowledge Industry Publications Inc., Communications Trends, Inc.

In the home market, the decision by TI to discontinue its TI 99/4A and the hundreds of millions of dollars in losses at Atari have greatly complicated the problems faced by software publishers. The Commodore 64 and VIC-20 represent the largest installed base in the home market as of the end of 1983, with TI, Atari and Radio Shack the other leaders. Many publishers are counting on introduction of the IBM PCjr in first quarter of '84 to help establish a de facto standard, comparable to what exists in the business market.

In the education market, Apple and Tandy have the largest shares, with IBM making a concerted effort to catch up. DEC and HP are strong in the colleges and universities.

As of the end of 1983, the largest number of published programs was available for the Apple II and IIe family, but IBM is moving up fast. Table 1.7 gives figures on total programs and programs by format. Between the beginning and end of 1983, the number of programs on the market as counted by "PC Clearinghouse Software Directory," an industry directory, grew nearly 75%, from 21,000 to 35,000. The growth rate for IBM PC programs was considerably higher than this.

Table 1.7:
Number of Programs for Apple, Radio Shack, IBM PC

PC Clearinghouse Count	Early 1983	Late 1983
Apple	2,044	Not
Radio Shack/TRS-80	1,941	separately
IBM PC	1,353	itemized
CP/M 80, CP/M NET, CP/M 86	2,512	
Grand total, all formats	21,000	35,000

Source: Communications Trends, Inc., calculated from "PC Clearinghouse Software Directory."

SOFTWARE AS PUBLISHING OR...

Print publishing is an analogy for and to some extent a model for the software business, but it is far from adequate for understanding the dynamics of this new field. Entertainment software resembles the movie or record business in its lack of predictability and in the mysterious ways in which one title captures consumers' fancy and stays at the top of the charts for a year, whereas another, objectively as good, sinks without a trace. Entertainment software developers and marketers with an intuitive sense of consumer tastes are akin to record producers or motion picture production chiefs--people of unique but hard to describe talent, who apparently must be born, not trained.

As an astute software entrepreneur, Warren Schloat of Sunburst Communications (Pleasantville, NY), has pointed out, once a popular program is established in the consumer software market, it has some of the staying power of a successful board game, i.e., a "Bank Street Writer" or "Typing Tutor" can go on selling year after year like "Monopoly" or "Scrabble," providing the cash flow from which to fund new development.

Analysis done by Communications Trends, Inc. suggests a different model for business productivity software. Producing these programs resembles the household tool business--a spreadsheet program enhances calculating and planning ability the way a jigsaw enhances cutting and shaping skills. In both cases, the function is being performed as part of a larger job--controlling a budget, making a cabinet--rather than as an end in itself. It is this functional test of business productivity software that makes it so different from entertainment programs, whose use is an end in themselves.

The tool analogy for business software carries over in another way: Most of us are able to make do with only a few tools in the toolbox--hammer, screwdriver, pliers, saw, perhaps an electric drill or jigsaw--and have no need of the hundreds of more specialized tools on the market. In addition, since a well-made tool lasts for years, there is no need to buy the latest model every season. Only the true handyman buys tools by the dozens and is always on the lookout for something new. In software, most computer users will be content to buy a few programs that work for them; it is the minority

who will want many programs or who will be constantly seeking to replace the old with the new.

The game and tool analogies are useful in forcing existing and potential software publishers to think about just what makes for success in this new field. The analogy of software publishing to print publishing breaks down in several important ways. It is true that like print publications, software is intellectual property and thus copyrightable; also that the physical cost of manufacturing software bears no relationship to its market worth, any more than the cost of paper and printing indicates what a highly specialized business report should sell for. But there are several key differences, among them:

. the need to maintain and upgrade software and to provide continuing technical support to customers--a process almost unheard of in the print publishing business;

. the potential unit sales over time for bestselling business titles, which are much more comparable to print products like dictionaries or encyclopedias than to the vast majority of short-lived trade or technical books;

. the technical and capital requirements for creating software, especially the need for programmers and other experts on staff, and the level of investment needed to compete in major applications software market segments.

All these characteristics make software publishing markedly different from print publishing, creating many dangers for publishers who want to rush into this alluring new business.

SUMMARY

Software companies are exerting considerable influence over the present course of the microcomputer industry, even though they are far smaller in sales than the major hardware manufacturers. This is due to the technological advances represented by major applications programs.

As a ratio of combined hardware/software sales, software alone accounted for about 13% in 1983, up from a little over 6% in 1981. Even in 1985, however, software is unlikely to account for more than 25% of the total.

Major markets for software are consumer, education and business/professional; the major types are systems and applications programs.

The software business cannot be understood merely by analogy with print publishing; the technical and capital requirements are very different, and the sales potential for individual programs has little counterpart in the print publishing world. Therefore, the potential for print publishers to make serious mistakes in this field must not be underestimated.

2

STRUCTURE OF THE SOFTWARE PUBLISHING BUSINESS

Software authors or developers, software publishers, software distributors and software retailers constitute the essential participants in this emerging industry, all cooperating to develop and sell programs to software customers. The following sections will describe these different groups, with particular reference to the economic realities for each.

AUTHORS

Software can be created by an individual working out of his basement, by a team of programmers in a structured corporate environment or by various alternatives in between. Some of the better known program authors are described below:

. Dan Bricklin, the principal author of "VisiCalc," dreamed up the idea for this most influential of programs while a student at Harvard Business School with Dan Fylstra, now president of VisiCorp. "VisiCalc" took more than a year to perfect but was worth it: It has since sold more than 700,000 copies and helped the personal computer industry to greatly expand its reach. Program sales produced tens of millions of dollars in revenues for Visicorp and millions in royalties for Bricklin and his co-authors. Much of this money has been plowed into the formation of Software Arts, a software creator and publisher in its own right.

. Wayne Ratliff created a program originally named "Vulcan" in 1978 and made a deal with George Tate of Ashton-Tate--then part of an umbrella company, Software Plus--to distribute it. Software Plus was a relatively small company with a strong perception that independent distributors could provide a much-needed link between program authors and the retailers who were gearing up to sell software. "dBASE II" has proved to be one of the most successful business programs ever introduced, having sold 150,000 copies by the end of 1983, and earning its creator millions in royalties. In November 1983, Ashton-Tate acquired all rights to the program from Ratliff for cash, notes and common stock valued at nearly $8.5 million.

. Franklin Smith, in conjunction with staff members at Intentional Education, and with assistance from colleagues at the Bank Street College of Education, created "Bank Street Writer" as an inexpensive, easy to use word processing program for children. One of the developers' goals was to encourage children to do creative writing by making it as easy as possible to

type into a computer. The Bank Street College of Education, which holds the copyright on the program, licensed Broderbund Software to publish a home version and Scholastic Inc. to publish a school version. By the end of 1983, when the program had been on the market less than a year, the two publishers between them had sold more than 100,000 copies, most of those for the Apple IIe version, and the balance for the Atari and Commodore 64. An IBM version, which required more conversion effort, was released at the end of the year.

. David Crane is a staff member and program developer at Activision, the largest of the independent video game cartridge producers--and a company that is moving rapidly into computer games as the video cartridge business continues to fall off. Of Crane's six video games, four won industry awards. The most successful, "Pitfall," stars Pitfall Harry, who encounters crocodile-infested swamps, vicious cobras and menacing tar pits in his search for riches. "Pitfall" won the award from Electronic Games magazine as the best video game adventure of 1983, and in 1982 sold more than 1 million copies. Described in one magazine article as a computer programming wizard, junk food addict, tennis player and science fiction buff, Crane has become one of the best known of the video game authors. Crane worked at National Semiconductor and at Atari before helping to found Activision; his royalties from game sales alone are estimated to run into the millions of dollars.

. Roberta Williams founded Sierra On-Line with her husband, Kenneth. She is the author of Sierra's bestselling game, "The Wizard and the Princess," which has sold more than 60,000 copies, as well as other bestsellers like "Mystery House" and "The Dark Crystal." Roberta writes the stories while Kenneth manages the business and technical side of the company.

. Tom Snyder is the author of "Snooper Troops," the bestselling educational game from Spinnaker Software. Snyder spent more than a year creating the game, which has sold more than 50,000 copies since it was released in fall 1982.

DEVELOPERS

It is easy to talk about authors as the first link in the chain of software publishing--easy, but misleading. These days complex programs are rarely the work of one individual the way a novel is the work of one writer. Instead, designing and completing these programs requires the cooperation of at least several people and at times, dozens.

Sometimes the author starts off alone, or with a husband or wife, and slowly builds a company as the first couple of programs take off. This is what happened with Sierra On-Line. In other cases, the author-turned-businessman realizes that he must assemble a team of people at the outset to do justice to his ideas.

Teams of software developers are working in all areas of the software field, on entertainment, educational and business programs. Many of these software developers like to call themselves publishers, but this is not an accurate description. A publisher is a company that offers information products for sale: By this definition a developer who turns a program over

to someone else to market is a packager or creator, not a publisher.

This definition notwithstanding, the dividing line between author and developer on the one hand, and between developer and publisher on the other, is often hazy; an individual or company can engage in more than one of these functions simultaneously. In general, the following guidelines apply:

. a program whose sole function is entertainment is more likely to have a single author than one whose function is education, business or personal productivity;

. the higher priced a program is, the more it will be the work of a team of developers rather than an individual;

. programs aimed at business customers are more likely to be created by a publisher's in-house developers than programs aimed at consumers or at the education market.

Table 2.1 defines some of the attributes of software authors, developers and publishers, while Table 2.2 shows how they get compensated.

Developers range in size from a few people to a few dozen. Among the smaller developers are Richard Hefter, a children's book writer and illustrator who with his wife created the "Sticky Bears" series of educational games that are published by Xerox Education Publications. Another small developer is Cognetics Inc. (Princeton, NJ), with a staff of four professionals; it created the "Computer SAT" program for Harcourt Brace Jovanovich.

Typical of the medium- and large-sized developers in the business market are Orchid Software in Austin, TX and Basic Software Group in Vancouver, BC, Canada. Orchid was founded by Tim Robinson, who broke away from BPI Systems, a leading publisher of accounting software. With a staff of 21, Orchid is developing accounting and business management titles; Orchid has licensed Prentice-Hall to publish its "Profit Center" series.

Basic Software Group employs 50 people, a larger staff than is found at many software publishers. It has created word processing, data base, spreadsheet and general accounting programs for Information Unlimited Software.

Table 2.3 lists representative authors and developers, with some of their principal creations.

ROYALTIES AND ADVANCES FOR AUTHORS AND DEVELOPERS

There is big money as well as fame in creating a bestselling computer program, whether for consumer or business markets. This fact is most apparent in the entertainment side of the software business. The new stars are not the kids who rack up astronomical scores playing arcade-type games, but the authors of the games. David Crane is featured in Activision TV commercials promoting his creations; other program authors go out on publicity tours the way book authors have done for years. In the business side of software, the process is more restrained, but the sums going to a successful author are

Table 2.1:
Authors, Developers and Publishers:
Some Characteristics

Category	Characteristics	Type of Individual or Firm	Type of Program
Author	Individual who conceives of, designs and does some or all of programming for software title	Individual who works on own, or with one co-author; can be self-employed or working for developer or publisher	Primarily entertainment; some single authors for education, business titles
Developer	Takes a program idea from conception to completion; requires design, programming, testing skills	Small- to medium-sized group; can be self-contained firm, group of independent contractors, or group within larger company	Primarily education and business; more complex, higher-priced titles require larger development teams
Publisher	Takes finished program; judges salability; sets price; arranges distribution; pays for all manufacturing, marketing and fees or royalties to creators.	Ranges in size from one- or two-person firm to 400 or 500 employees, either as independent or as division of larger company	Consumer, education, business. Larger publishers are found in business market

Source: Communications Trends, Inc. analysis

Table 2.2:
How Authors, Developers and Publishers Get Compensated

Category	Type of Compensation
Author	Salary and bonus, if on staff; fees, advance and royalties, if independent. Royalty: 5% to 25%; advance: 0 to $50,000
Developer	Development fees, advance against royalties. Royalty: 5% to 25%. Fees and advances: $10,000 to $100,000
Publisher	Wholesale receipts from sale of programs to distributors, retailers, individual customers. License fees from OEM sales to manufacturers, foreign sales

Source: Communications Trends, Inc.

Table 2.3:
Representative Software Authors and Developers

Name	Status	Program	Publisher
David Crane	Employed by Activision	Pitfall, other games	Activision
John Page	Vice president of Software Engineering, Software Publishing Corp.	PFS:File, PFS:Report	Software Publishing Corp.
Orchid Software	Independent development firm	The Profit Center series	Prentice-Hall
Franklin Smith	Independent author, working with Bank Street College of Education	Bank Street Writer, Bank Street Speller	Broderbund (home version) Scholastic (school version)
Bill Budge	Independent author	Pinball Construction	Electronic Arts
Tom Snyder	Independent author, developer	Snooper Troops	Spinnaker
Roberta Williams	Co-founder, Sierra On-Line	Mystery House, Dark Crystal	Sierra On-Line
Dan Bricklin	Founder, president, Software Arts	VisiCalc	VisiCorp

Source: Compiled by Communications Trends, Inc.

much larger. No author of an entertainment program comes close to the millions of dollars in royalties earned by the authors of "VisiCalc" or "dBASE II."

Whether publishers offer advances and how much they pay in royalties vary enormously with the type of publisher, its size and success and the bargaining power of the program creators. Many consumer and business publishers have a stated policy of not paying advances, but even this policy gets waived when they want a program badly, or when the creator has significant bargaining power. Sirius (Sacramento, CA) did offer advances upon signing a contract in its first years but abandoned the practice "after being burned once too often," a company spokesman said. Nevertheless, the company does make payments to authors when a finished program is delivered. Royalties average 17% of net sales, which is in the middle of the royalty range that is fairly typical for entertainment software publishers: 15% to 20%.

On the high end of advances is Electronic Arts (San Mateo, CA), which paid author Bill Budge an advance in the high five figures for his "Pinball Construction Set" for the Apple IIe. If the program sells the 100,000 units that the publisher hopes for, at $40 list, that would represent $2 million in publisher's receipts. At a 20% royalty, the author's earnings would come to $400,000.

Hayden Software generally offers a modest advance of 10% of expected first year royalties. Broderbund pays up to 25% royalties on disk-based programs; royalty rates are lower on cartridges because of the risk of unsold inventory. The amount of advances is related to the author's need for money and the competitive situation.

At Ashton-Tate, one of the leading business publishers, royalties range from a few percent to 25% of net sales. However, the spectacular success of "dBASE II" caused a royalty obligation running into the millions of dollars. To get out from under this obligation, Ashton-Tate used part of the proceeds of its public offering to buy out the program's author, Wayne Ratliff. The payment included $150,000 in cash, interest-bearing notes with a face value of $6.35 million and almost 400,000 shares of A-T stock.

Continental Software, a division of Arrays Inc., generally pays 20% of net sales in royalties. Its "Home Accountant" program contributed 41% of net sales, or more than $1.8 million in revenues, in the first nine months of 1983; the three principal owners of Arrays purchased rights to this program and several others for $3 million. Arrays will continue to pay the same royalty to the new owners, but has the right to purchase the program for the token sum of $1 after $5 million in royalties has been paid.

Instead of acquiring the program, one publisher acquired the company that owns the program: Scarborough Systems (Tarrytown, NY) bought Lightning Software to gain control of its bestselling program, "Master Type." Scarborough generally pays 15% of net sales to outside developers.

Educational software publishers generally pay lower royalties, as do book publishers getting into the software business. For these companies,

10% to 15% of net sales is a much more typical range than 15% to 20%. Reader's Digest, for one, would like to keep royalties under 10%, and if possible to around 5%.

Another factor to consider, however, is that book publishers and others getting into software badly need to establish relationships with program creators, and this requires spending money upfront for advances. The counterpart of a lower royalty percentage may be a considerably higher advance than would be paid by an established software company.

When CBS Software reached agreement with the software division of Children's Television Workshop for publication of a series of children's software programs, it agreed to underwrite much of the development cost as well as to pay a royalty; the commitment by CBS came to well over $1 million. The guarantee by Scholastic to Bank Street College of Education and other developers of "Bank Street Writer" reportedly came to well over $100,000, just for the school marketing rights to this program.

PUBLISHERS

A software publisher offers a finished software package for sale to the public. This process involves:

. acquiring the rights to products from creators, or having in-house designers and programmers do the development;

. testing and revising programs, making sure that they work as intended, and producing necessary manuals (documentation) to accompany them;

. getting programs manufactured;

. marketing programs to distributors, retailers and individual customers.

Each of these functions involves expense; in general, marketing consumes a greater proportion of revenues than any other activity. (Chapter 4, The Economics of Software Publishing, provides figures on these various costs.) The major categories of software publishers are consumer, educational and business/professional. Some examples in each category follow.

Consumer

Consumer software publishers primarily supply games; the leaders are Sierra On-Line, Broderbund, Infocom, Epyx, Muse, Electronic Arts and Hesware. Publishers of personal productivity programs, e.g., in home finance, filing or word processing, include Sierra On-Line, Broderbund, Continental Software. A third category consists of home educational software; the clear leader here is Spinnaker, with the Learning Company, Scholastic, CBS Software, Reader's Digest and EduWare all involved in the market. Almost all consumer software is priced at $30 to $60, with a few specialized programs, such as SAT test preparation software, priced somewhat higher.

Education

Educational software publishers produce courseware for use in schools and colleges. All the major educational book publishers are active in this field, including SFN (through its Scott, Foresman, Silver Burdett, South-Western divisions), McGraw-Hill, Houghton Mifflin, Harcourt Brace Jovanovich and Scholastic. Among the smaller companies that have specialized in educational software are EduWare (now a subsidiary of MSA/Peachtree), Milliken and Sunburst Communications. Typical prices for educational programs are $50 to $150 per title.

Business/Professional

Business/professional software publishers market systems and applications software to self-employed professionals, small business people and large companies. Spreadsheet, word processing and data base/file management programs are the bestselling types. The leading companies are Microsoft, VisiCorp, Lotus Development Corp., MicroPro and Digital Research Corp. Hundreds of other firms are seeking to compete in this lucrative market, which accounts for 70% of all software expenditures.

Table 2.4 lists leading publishers with their estimated revenues in each market segment. Chapter 3 provides details on each of these markets; profiles of representative companies from each segment appear in Chapter 6.

MARKETING AND DISTRIBUTION CHANNELS FOR PUBLISHERS

Publishers can reach customers in a variety of ways. These include:

. Direct sales, via direct mail or direct sales forces. Direct sales are used by software publishers in the education and business markets, though rarely in the consumer market. The largest business software companies--MicroPro, Lotus, Microsoft--are establishing national sales forces to sell to large companies, even though such sales still represent a small portion of overall revenues.

. Retail sales, via distributors or directly to retailers. Consumer and business software companies both rely on this channel for the majority of their revenues. The entertainment software companies rely almost exclusively on distributors, whereas the large business/professional publishers deal directly with the biggest retailers. In early 1984, Microsoft reduced the number of distributors with whom it was dealing from 30 to about half a dozen, among them Softsel and Micro D (see next section).

. Bulk and OEM sales and license fees. In the business/professional market, both systems and applications software houses sell their software to manufacturers, who package it with their computers or who sell it as stand-alone software under their own name. Licensing also takes place to other software companies (for adaptations of a basic program) and to overseas distributors.

These different marketing channels make for a confused marketplace in

Table 2.4:
Leading Software Publishers and Estimated Revenues,
by Market, 1983*

--------all revenues in millions--------

Business/professional

Company	Revenues
Microsoft	$ 70
VisiCorp	60
Lotus Development	48
MicroPro	45
Digital Research	38

Consumer

Company	Revenues
Sierra On-Line	$ 12
Spinnaker	11
Broderbund	7
Infocom	6
Epyx	6

Educational

Company	Revenues
SFN	$ 3
Scholastic	2
Milliken	**
Sunburst	**
EduWare	**

*some figures are for fiscal years **less than $2 million

Source: Communications Trends, Inc. estimates.

which software companies often wind up competing with their own distributors and dealers. Figure 2.1 illustrates the complexity of this environment with reference specifically to the business/professional software publishers.

DISTRIBUTORS

Independent software distributors have played a central role in the software market since its early days, and have been especially important in the emergence of retail outlets as the most important sales channel for computer programs. The distributors occupy a middleman role between publisher and retailer, performing functions that serve them both, such as:

. evaluating new software from hundreds of suppliers;

. stocking programs and providing speedy shipments to retailers, thus reducing the inventories they need to carry;

. providing combined shipments and billing of products from different suppliers;

. providing return or exchange privileges that allow a retailer to exchange publisher A's titles for publisher B's.

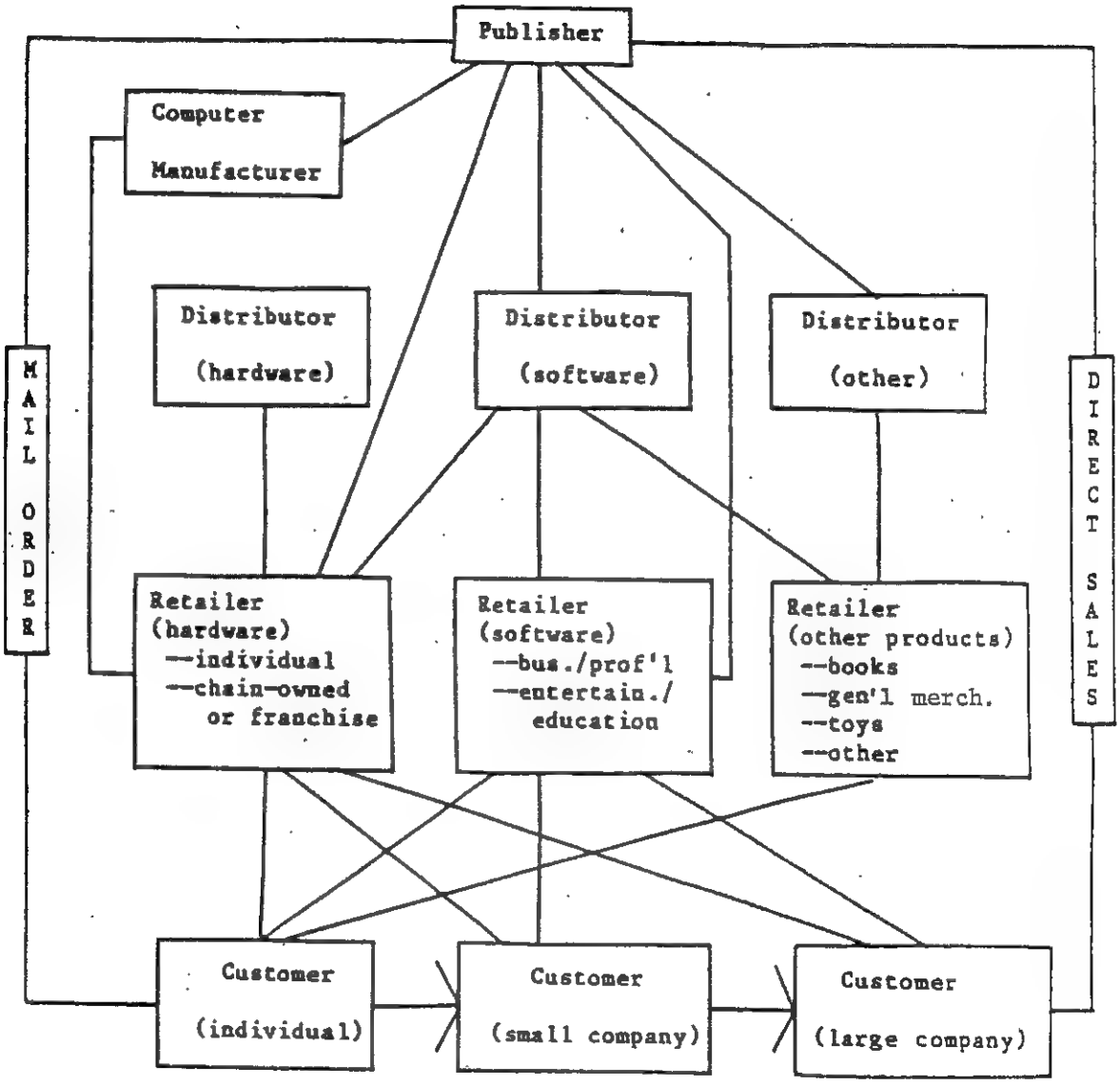
Of more than 20 software distributors, the leader by a wide margin is Softsel Computer Products, followed by Micro D. Each carries more than 3000 titles from more than 200 suppliers, and serves 2500 to 3500 retail outlets. Other leaders are Softeam (formerly Software Distributors), SKU, Softsmith, Software Distribution Services and MicroAmerica Distributing. Ingram Book Co., the largest bookstore distributor, entered the market in 1983. McKesson Corp., the large drug distributor, also entered the field by acquiring SKU. Table 2.5 lists leading distributors and their estimated revenues, while Chapter 6 contains brief profiles of each.

Table 2.5:
Leading Software Distributors and Estimated Revenues,
1983

	------all figures in millions------	
Company	Revenues	Software revenues
Softsel	$ 85	$ 80
Micro D	71	30
SKU	20	17
Softeam	20	18

Source: Communications Trends, Inc. estimates.

Figure 2.1:
Distribution Channels for Business/Professional Software



Source: Communications Trends, Inc.

RETAILERS

At least 9500 retail outlets were selling microcomputer software by the end of 1983. The most important channel has been, and continues to be, computer specialty stores, of which there are 3500 to 4000. Computer stores are strongest in selling business software, especially at the time of the customer's initial computer purchase. Their weakness is that they stock only a limited number of titles and tend to view software only as a means of selling hardware rather than as a business on its own.

Nineteen eighty-three saw a marked rise in the number of stores owned by or affilated with a chain or franchise. The largest of these are ComputerLand, which had 580 franchises as of year-end 1983; Radio Shack, which had 420 company-owned computer centers; Entre Computer Shops, which had 75 franchises; and ComputerCraft and CompuShop, each of which had more than 30 company-owned computer stores. Table 2.6 lists some of the leading franchisers and chains as of December 1983.

Besides computer stores, a number of other retailers carry computer software. Among these are:

. software stores, which numbered more than 200 by the end of 1983. Two franchisers, Software City and Softwaire Centers International, and one chain that combined company-owned stores and franchises, The Program Store, accounted for more than 120 of these outlets: Software City had 52, Softwaire Centers had 50 and The Program Store had 20 (Table 2.7). Usually software stores emphasize either entertainment or business software; Software City and The Program Store are entertainment-oriented, while Softwaire Centers International is business-oriented;

. mass merchandisers like Kmart, Toys R Us, Venture Stores and The Broadway department store. Although at least 5000 mass merchandise outlets sell software, these stores carry only a limited selection--usually 50 titles or less--and it accounts for under 1% of store sales. Except for Toys R Us, mass merchandisers generally buy through distributors. Their buying procedures often conflict with the way software publishers prefer to sell: The mass merchandisers want rack-jobbing services, return privileges and high discounts, whereas the publishers, although willing to grant high discounts for volume purchases, aren't equipped to offer rack jobbing (although certain distributors do) and accept only limited returns, usually in exchange for new merchandise;

. bookstores like the Walden and B. Dalton chains, and independent stores like the McGraw-Hill Bookstore, University Bookstore (Seattle, WA) and Cody's Books (Berkeley, CA). Fewer than 300 bookstores carried software in any significant quantities in 1983; if Walden and Dalton put software in all stores, however, as they intend, the number would jump to well over 1500;

. other specialty stores such as record stores, camera and photo stores, video stores and consumer electronics outlets.

Table 2.6:
Leading Computer Store Chains and Franchisers,
December 1983

Company	Category	Number of outlets or franchises
ComputerLand	Franchiser	580
Radio Shack	Owner/operator	420
Entre Computer Shops	Franchiser	75
Programs Unlimited	Franchiser	52
CompuShop	Owner/operator	35
ComputerCraft	Owner/operator	33
Inacomp	Owner/operator; franchiser	23 (11 owned; 12 franchised)
Byte Shops	Franchiser	15
Businessland	Owner/operator	15
Computer Factory	Owner/operator	7
Sub-total, 6 owner-operators		521
Sub-total, 5 franchisers		734
Total 10 companies*		1,255

*Inacomp counted as one company in each sub-total

Source: Communications Trends, Inc., compiled from company interviews, financial reports, industry sources

Table 2.7:
Leading Software Chains and Franchisers, 1983

Company	Category	Number of Outlets or Franchises
Softwaire Centers Int'l	Franchiser	50
Software City	Franchiser	52
The Program Store	Owner-operator; franchiser	20
Total, 3 companies		122

Source: Communications Trends, Inc.

Obviously not all retailers selling software are of equal importance to the software publisher. For example, although mass merchandisers account for the largest number of outlets, the percentage of sales they derive from software is generally quite low--usually less than 1%. Table 2.8 provides an overview of the different types of retailers selling software.

Table 2.8:
Retail Outlets Carrying Software by Number and Type, 1983

Category	Number of stores selling software	Importance of software to typical outlet
Computer stores	3,500 to 4,000	Medium/high; 8% to 25% of sales
Mass merchandisers	5,000 to 7,500	Low; under 1% of sales
Software stores	200 to 300	High; 80% to 100% of sales
Bookstores	500 to 1,500	Low; under 5% of sales
Other: record, photo, video, etc.	500 to 1,000	Low; under 5% of sales
Total	9,700 to 14,300	

Source: Communications Trends, Inc.

DISCOUNT STRUCTURE, RETURNS AND EXCHANGES

Software publishers generally offer higher discounts to distributors and retailers than are found in fields like records, books or office products. Dealer discounts for software start at a low of 35% and go as high as 60%; the typical range is 40% to 50%. Distributor discounts start as low as 40% and go as high as 65%. The lowest discounts are offered by manufacturers like Commodore, Atari and TI and the highest by small independent software publishers who are totally dependent on distributors for sales. Using an average discount of 45% to retailer and 55% to distributor for business titles, and 40% and 52% respectively for entertainment titles, Table 2.9 calculates the distributor and dealer margins in dollars and as percentage of their selling price.

Software publishers began by not accepting returns, although this restriction is easing as programs move into more retail outlets and as competition for display space intensifies. A typical policy is to allow returns only in exchange for new orders, and only as a percentage of purchases--e.g., 10%--in some prior period. Among distributors, Micro D does not accept returns; Softsel permits retailers to order one copy of a product on 30-day evaluation and to exchange certain products within 90 days of purchase; Ingram offered return privileges to new accounts when it entered the software business, and is moving toward more liberal returns in general.

Table 2.9:
Discounts and Gross Margin Percentages for Typical Entertainment and Business Programs

	Entertainment program	Business program
List price	$ 40.00	$400.00
Wholesale price to distributor	19.20	180.00
Distributor price to retailer	24.00	220.00
Distributor gross margin	4.80	40.00
Gross margin %	20%	18%
Retailer gross margin	16.00	180.00
Gross margin %	40%	45%

Source: Communications Trends, Inc.

SUMMARY

Software is created by authors and developers, who can either be independent, or who can work for software publishers. In the entertainment software field, most programs are created by independent contractors, whereas in business software, much of the development is done by in-house programmers. Outside authors may earn royalties as high as 25% of net receipts, although a range of 15% to 20% is more typical; in the education market, royalties are lower. A publisher is a company that has the ability to do its own marketing, in contrast to a developer, which turns over a finished program to someone else to market.

Publishers market in a variety of ways: directly to customers by direct mail or--for certain business software--through sales forces; through independent distributors to retailers; or directly to retailers. They also sell on an OEM or license basis to manufacturers.

There are upwards of 20 independent distributors, of whom the most important are Softsel, Micro D, SKU and Softeam. As for retailers, more than 9500 retail outlets market software; the largest number consists of mass merchandisers, but the biggest sales volume goes through computer stores. Software stores, bookstores and other specialty stores are promising new outlets for software but did not account for a significant portion of sales in 1983.

Typical discounts to distributors range from 50% to 60%, whereas discounts to retailers start as low as 35% and go as high as 60%.

3

THE MARKETS FOR SOFTWARE

Individuals, companies, schools, colleges, libraries and other institutions are the customers for microcomputer software. These buyers can be grouped in various ways: according to the individual or organization doing the purchasing, according to the type of software purchased, or by some combination of these categories.

The most important distinction in the software field at present is whether a program is bought for personal or professional use: the fact that an individual at home buys "WordStar" or "VisiCalc" doesn't automatically make it a consumer purchase. If the customer is a writer who earns his living selling books and articles, or a manager who takes work home regularly, or an accountant who has a practice in his home, then the purchase is more accurately described as a business/professional one. The three main markets discussed in this chapter are:

1) the consumer market, consisting of those individuals buying entertainment, educational or personal productivity software (e.g., home finance programs) for personal use;

2) the education market, consisting of schools and colleges buying courseware for instruction, or other software as part of a computer literacy or computer education program;

3) the business/professional market, consisting of companies, governmental agencies, not-for-profit organizations, professional practices (law, accounting, consulting) and self-employed individuals.

These three markets will be described with reference both to their overall purchase of information and entertainment products, and their specific purchase of software.

THE CONSUMER MARKET

In 1982, consumers spent more than $60 billion to purchase media and information products. These products include:

- newspapers
- magazines

- books
- radio and TV sets
- phonographs, audio equipment, records and tapes
- motion picture attendance
- video cassette recorders, video disc players, blank and prerecorded tapes and discs
- cable and pay TV subscriptions
- video game hardware and cartridges
- home computers, computer software and computer services (videotext, online data base searching)

Table 3.1 shows the principal components of consumer spending on information products, divided into three categories: print; traditional audiovisual and electronic media; and new electronic media. In the years 1980-82, the share of consumer spending going to new electronic media surged dramatically, from 17.5% to 30.8% of total spending. The share going to traditional audiovisual/electronic media dropped just as dramatically, from 51.6% to 40.5%, while the proportion going to print media also declined, but by much less: from 30.9% to 28.7% (Table 3.2).

The biggest reason for this shift to new electronic media, however, was the rise of the video game industry, in both arcade and home console versions. It now appears that the video game business reached a never-to-be-repeated pinnacle in 1982, and that it will become much less important in coming years. This is due both to faddish appeal of the arcade and home video games, and to the fact that home computers are proving to be more versatile game machines.

The importance of video game spending to total consumer purchases of new electronic media can be seen from the last line in Table 3.2, which calculates the rise in the share going to new electronic media when the purchases of video games are excluded. The increase is not 13 percentage points, but five.

The experience of the video game boom and bust does raise the question of whether the home computer industry will follow a similar course. Sales of home computers rose from 150,000 units in 1980 to an estimated 2 million in 1982 and to perhaps 3.7 million in 1983. One has to wonder whether this universe of nearly 6 million homes, or 7.5% of U.S. households, does not represent a saturation of the most likely buyers, and if so, whether the true penetration of the home computer won't be in the 10% to 25% range, rather than the 50% to 90% that is often forecast by industry boosters.

Sales of home computer software do not seem to have grown in direct proportion to shipments of home computers, and certainly many publishers of

Table 3.1:
Consumer Spending on Media and Information,
1980 and 1982

SEGMENT	1980 Amount	1980 % of total	1982 Amount	1982 % of total
	------all dollar figures in millions------			
Print				
Newspapers	$ 5,500	11.8%	$ 6,750	11.2%
Magazines	3,970	8.5%	4,570	7.6%
Books	4,906	10.5%	6,030	10.0%
Traditional audiovisual/ electronic				
Radio/TV sets	9,134	19.6%	9,635	15.9%
Records, tapes, audio equipment	12,164	26.1%	11,388	18.8%
Motion picture theater admissions	2,748	5.9%	3,440	5.7%
New electronic media				
Cable and pay TV	2,438	5.2%	4,200	6.9%
VCRs, tapes, discs	1,531	3.3%	3,185	5.3%
Video games, arcade and home	4,100	8.8%	10,325	17.1%
Home computers, software, computerized information	78	.2%	930	1.5%
Total	$46,569	100.0%	$60,453	100.0%

Source: "Consumer Media Expenditures, 1982-1987," Knowledge Industry Publications, Inc., 1983

Table 3.2:
The Shifting Shares of Print, Traditional Audiovisual/ Electronic and New Electronic Media in Consumer Spending, 1980 and 1982

Segment	Share of Total Spending 1980	1982
Print	30.9%	28.7%
Traditional audiovisual/ electronic	51.6%	40.5%
New electronic media	17.5%	30.8%
(New electronic media excluding video games)	8.7%	13.7%

Source: Calculated from Table 3.1, based on Knowledge Industry Publications, Inc. data

consumer entertainment and educational programs have learned that instant success is not a feature of this business. Kenneth Williams, president of Sierra On-line, commented in December 1983 that his company's sales did not double in 1983, as might have been expected because of the doubling of computer sales, but instead rose by a much more modest 20%. The tremendous proliferation of new software titles in 1983 has begun to clog distributor and retailer inventories, and is bound to lead to price cutting and clearance sales in the future.

The experience of the video game cartridge suppliers certainly should give pause to anyone who forecasts spectacular, uninterrupted growth in the sales of microcomputer entertainment software. After more than doubling between 1980 and 1982, consumer spending on arcade games, home consoles and cartridges plunged in 1983, as consumers began to tire of their new electronic toys, and as producers, distributors and retailers sought to clear out the oversupply of hardware and cartridges. Retail prices of some cartridges also plummeted, from as high as $35 in 1982 to as low as $5 in late 1983. At the major manufacturers like Warner and Mattel, red ink ran into the hundreds of millions; even much smaller independent cartridge publishers, like Activision, sustained multimillion dollar losses.

Economics of Software Publishing in the Consumer Market

To understand the present and future economics of consumer software publishing, it is instructive to compare it to several similar businesses: records and tapes, prerecorded video cassettes and mass market paperbacks. Table 3.3 lists some of the characteristics of these fields, particularly the relationship between manufacturing costs and wholesale price, while Table 3.4

Table 3.3:
Cost and Gross Profit Ratios for Comparable
Consumer Media Products: Tapes, Video Cassettes, Paperbacks

	Music audio tape	Prerecorded video cassette	Paperback book
List price	$7.95	$39.95	$3.95
Wholesale price	4.45	26.97	2.17
Manufacturing cost	.80	8.00	.30
Royalty	.70	4.00	.50
Gross margin	2.95	14.97	1.37
As percent of wholesale price	66.3%	55.5%	63.1%

Source: Communications Trends, Inc.

Table 3.4:
Cost and Gross Profit Ratios
for Consumer Software at Different Prices

List price	$40.00	$30.00	$20.00
Wholesale price	18.00	13.50	9.00
Manufacturing cost	3.00	3.00	3.00
Royalty	2.70	2.00	1.35
Gross margin	12.30	8.50	4.65
as percent of wholesale price	68.3%	63.0%	51.7%

Source: Communications Trends, Inc. estimates and calculations

provides a way of looking at these same ratios for microcomputer software at different list prices. The prerecorded music business and the paperback book business are both mature, well-established fields with known cost structures. Although discounting, clearance sales and sudden rises in costs for various reasons are always possible, companies can nevertheless plan on gross margins after manufacturing costs and royalties of better than 60%. Even so, profitability sometimes eludes even the major firms, because of shortfalls in sales; ongoing general, administrative and selling expenses in these industries are a relatively high percentage of revenues.

The prerecorded video cassette business is a much newer field, and is currently undergoing a transition. Prices of prerecorded tapes, once as high as $70 to $80 for hit movies, are coming down to the $30 to $50 price range. Although this means lower gross margins, it can ultimately result in higher profits, if the cassette distributors are able to change the market from one dominated by rentals to one in which outright sales of movie cassettes become significant.

The consumer software business is newer still. At list prices of $30, $40 and up, leading producers are able to enjoy very high gross margins and excellent profitability. But the experience of other businesses, and most notably the video game cartridge producers, suggests that over time these margins cannot be maintained. If average software prices were to fall to $20 per unit, as is shown in the last column of Table 3.4, gross margins after manufacturing costs and royalties would decline to barely 50%. It is doubtful that many of the leading software publishers would be profitable at this level, given their present sales and administrative costs. Chapter 4, The Economics of Software Publishing, explores these costs in more detail.

Bestselling Programs in the Consumer Market

Games, personal productivity programs and home educational programs have all sold in substantial quantities in the consumer market; several of the bestsellers have cumulative unit sales that comfortably exceed 100,000. Some of the individual titles that have sold best include Infocom's "Zork," Broderbund's "Bank Street Writer," Lightning Software's "Master Type" and Muse's "Castle Wolfenstein." Table 3.5 lists representative bestsellers according to unit sales, and shows the consumer purchases that these units represent at list price. Publishers' receipts are considerably less than these dollar figures because of trade discounts and licensing deals.

THE EDUCATION MARKET

Schools and colleges form one of the largest and most stable markets for information products, based on a population of more than 58 million students in elementary and high schools, colleges and universities. Schools, colleges and universities spend more than $3 billion annually on textbooks, audiovisual materials and other instructional materials, as well as on general books and magazines. Table 3.6 presents recent trends in educational enrollments, expenditures and spending on textbooks and materials. Most of following discussion will concentrate on the school, as opposed to the college, market for software, because it is both larger and more concentrated. It is also the

Table 3.5:
Representative Bestselling Programs in the Consumer Market

Program	Publisher	Cumulative Unit Sales	Consumer Purchases
Zork I	Infocom	250,000	$10,000,000
Typing Tutor	Microsoft	250,000	10,000,000
Temple of Apshai	Epyx	100,000	4,000,000
Proving Ground	Sir-Tech	100,000	5,000,000
Master Type	Scarborough/ Lightning	100,000	4,000,000
Castle Wolfenstein	Muse	75,000	2,225,000
Bank Street Writer	Broderbund	75,000	5,250,000
Mystery House	Sierra On-Line	75,000	1,500,000
Snooper Troops I	Spinnaker	50,000	2,250,000
The Home Accountant	Continental	40,000	4,000,000

NB: The above list is representative, not definitive. Numerous other consumer titles have sold more than 40,000 units.

Source: Communications Trends, Inc.

focus of most of the investments being made by publishers in microcomputer software.

Experimentation by schools and colleges with computers as teaching tools goes back to the early days of the computer industry. This experimentation blossomed in the 1960s, as companies like IBM, RCA, Raytheon, Westinghouse, Xerox, Litton and General Electric entered the education market through the acquisition of textbook houses, the introduction of electronic learning aids or of computer-assisted instructional programs. This early period of experimentation, underwritten in part by new federal education funds, did not succeed in transforming the educational process, as its sponsors had hoped. Most of the projects were subsequently abandoned or greatly scaled back: The computer hardware cost too much, the required programs were scarce or of questionable value.

The current microcomputer revolution in the schools represents a second coming for computer-assisted education. Unlike the first wave of experimentation, the second is much more soundly based. The key aspects of this computer revolution are the following:

Table 3.6:
Education Market Trends in Enrollments,
Overall Expenditures, Spending on Materials,
1980-82

	1980	1981	1982
Elementary-high school			
Enrollments (000)	46,700	46,000	46,000
Total expenditures (millions)	$108,600	$116,300	$126,700
Purchase of textbooks, other instr. materials (millions)	$ 1,620	$ 1,710	$ 1,800
Colleges and universities			
Enrollments	11,600	12,100	12,300
Total expenditures (millions)	$ 61,100	$ 65,000	$73,100
Purchase of textbooks, other instr. materials (millions)	$ 1,000	$ 1,160	$ 1,240
Totals			
Enrollments (000)	58,300	58,100	58,300
Total expenditures (millions)	$169,700	$181,300	$199,800
Purchase of textbooks, other instr. materials (millions)	$ 2,620	$ 2,870	$ 3,040

Source: Communications Trends, Inc., based on figures from U.S. Education Department, Association of American Publishers, Knowledge Industry Publications, Inc.

. inexpensive microcomputer hardware, and hefty discounts or donations by manufacturers, have put micros within reach of most schools, even most classrooms. As an example, Apple Computer had lobbied hard for a bill that would have permitted it to give a computer to every school in the U.S. and to take an income tax deduction based on the retail price of the computer. This bill did not become law, but because of favorable tax treatment in California, Apple proceeded to give away thousands in that state.

. a strong, growing tide of software. School and college courseware is available from hundreds of publishers, from the largest el-hi companies (SFN, Houghton Mifflin, CBS, Addison-Wesley) to small specialized publishers that have concentrated on microcomputer software (PDI, Milliken, Sunburst and others).

. the interplay between home and school adoption of microcomputers. As more parents buy computers at home and as more children get used to them, one of the barriers to introducing computers in the schools--the psychological barrier--tends to disappear. Both parents and kids tend to expect schools

to have micros--and are vociferous in demanding that they have them. The interplay between home and school, and the declining hardware prices, means that a teacher can buy a micro with his or her own funds and bring it into the classroom, or that a PTA can underwrite the purchase of one or more computers just from the proceeds of a cake or candy sale.

Size of the Educational Software Market

The school software market was worth an estimated $21 million in publishers' sales in 1982, compared to $9 million in 1981. In 1983 it grew to $38 million. One has only to compare this sum to the overall purchases of instructional materials by schools to see that software will not soon constitute a significant portion of the el-hi market. Table 3.7 compares school spending on all instructional materials to spending on computer courseware in 1982 and 1983. It also shows what percentage of the total market software would represent if these sales were to grow by 27%, 50% or 67% per year for the next three years, while the total market was growing at 6%.

Because software will be a minor portion of the school market in 1986 does not mean it will be insignificant to leading publishers. Consider the case of SFN Companies, the parent of Scott, Foresman, of Silver Burdett and of South-Western Publishing. In its fiscal 1983 it derived $3.1 million in revenues from electronic publishing activities--primarily sales of software. That was only 1.4% of SFN's total el-hi revenues of $193.4 million in the same year. Nevertheless, SFN's software revenues tripled between 1981 and 1982, and more than tripled between '82 and '83. Thus, it is conceivable that by 1986, software sales for this one firm could be six or seven times higher

Table 3.7:
School Software Sales Compared to
Total El-Hi Instructional Materials Sales,
1982, 1983 and Projected 1986

	--all dollar figures in millions--		
	1982	1983	1986P
Total instructional materials sales	$1,800	$1,930	$2,300
Software sales	21	38	177 H 128 M 78 L
As percent of total	1.9%	3.6%	7.7% 5.6% 3.4%

H = high estimate; M = median or best estimate; L = low estimate

Source: Communications Trends, Inc. calculations, based on Knowledge Industry Publications, Inc. data

than in 1983, or more than $20 million, out of total el-hi revenues of between $215 and $230 million.

Development and Marketing of Educational Software

Because educational publishers employ large staffs of editors, designers and consultants to develop and refine curriculum materials, the development process for software is not nearly as foreign to them as it is for hardcover trade or mass market paperback houses. In-house software development is underway at giant companies like SFN, with more than 35 developers at its Electronic Publishing division, and at smaller firms like Sunburst, with fewer than a dozen. On the whole, however, educational publishers are acquiring more software from independent developers than they are creating under their own roofs.

Some of the developers are:

. Cognetics Corp., based in Princeton, NJ, which has developed the "Computer SAT" program for HBJ, as well as a companion "GRE Preparation Software Package";

. Minnesota Educational Computing Consortium in St. Paul, MN, which has created more than 100 programs, some published under its own name, some in conjunction with commercial publishers;

. Intentional Education in Waltham, MA, whose programs include "Bank Street Writer," developed with author Franklin Smith.

A common relationship in the educational software field is for publishers to pay an upfront sum that consists in part of an advance against royalties and in part of a reimbursment against development expenses. Such guarantees may run as high as $50,000 to $100,000; for an elementary series spanning several grades and containing many individual packages, budgets might rise into the hundreds of thousands of dollars, but this was hardly the norm as of 1983.

In general, royalties are lower than on consumer software and on business/professional programs; educational publishers try to keep royalties in the range of 5% to 10% of net sales, though some go as high as 15%. It is difficult to generalize, however, because so much depends on the shape a program is in when acquired. A finished program that the developer has begun selling under his own name may command royalties as high a 20% to 25% of net revenues, if no advance is required.

THE BUSINESS/PROFESSIONAL MARKET

The business/professional market is the major arena for software publishers in 1984; it is the one market where revenues and profits are significant for the leading publishers. As an illustration of how dominant the business/professional software companies are in the software business as a whole, consider the numbers in Table 3.8, giving combined sales of the three largest business/professional micro software companies, compared to combined

revenues of the three largest consumer and educational companies.

The reason for this predominance is that it is the business and professional users who are reaping the benefits of improved productivity using microcomputers: what venture capitalist Benjamin Rosen, who invested in Lotus Development Corp. and in Compaq Computer, calls the 1000 to one payoff in productivity software.

Although it is often assumed that the consumer market is the huge prize for software publishers, a dispassionate look at the figures must call this belief into question. The business/professional market for information and professional services is enormous--so large that it almost defies measurement, let alone comprehension. As Table 3.9 indicates, business firms spent an estimated $140 billion on such services in 1983. Even the two segments of this market that are most akin to software publishing are enormous in their own right: $32 billion in revenues of computer services companies, including software firms, and $9.7 billion in revenues of business information firms.

Revenues of business/professional microcomputer software companies came to $468 million in 1983, although customer purchases were actually $936 million. (The high discounts granted to distributors and retailers, averaging at least 50% of the list price of business software, account for this discrepancy.) The sum of $468 million represents less than three tenths of 1% of the total business services market, less than 1.5% of the computer services pie.

Table 3.10 shows recent growth trend in these segments, and projects the revenues that microcomputer software firms would have in 1986, if their business were to grow at 205%, at 274% and at 365% over this three-year period. Revenue growth for the other two segments, computer services and business information, is projected at 18% and 10% respectively, close to their recent historical patterns. Under the median forecast, software publishers in the business/professional market can look forward to revenues in 1986 of nearly $1.8 billion. Even under the most conservative forecast, the market will still be worth well over $1 billion in 1986.

Table 3.8:
Three Largest Business/Professional Software Companies
Compared to Three Largest Consumer/Educational Firms

Business/Professional		Consumer/Educational	
	----------all revenues in millions----------		
Company	1983 Revenues	Company	1983 Revenues
1. Microsoft	$ 70	1. Sierra On-Line	$ 12
2. VisiCorp	60	2. Spinnaker	11
3. Lotus Development	48	3. Broderbund	10
3 company total	$178	3 company total	$ 33

Source: Communications Trends, Inc. estimates

Table 3.9:
The Business/Professional Market for
Information and Services

Segment	-in millions- 1983 Revenues
Business publications, other providers of copyrighted information services	$ 9,700
Computer services companies, including remote computing, software, consulting	32,000
All other services, including legal, accounting, engineering, architectural, etc.	98,300
Total business services	$140,000

Source: Communications Trends, Inc. estimates, based on figures from U.S. Census Bureau, Knowledge Industry Publications, Inc., Association of Data Processing Service Organizations, other sources

Table 3.10:
Comparative Size of Microcomputer Software,
Business Information and Computer Services Market,
1981, 1983 and 1986

Segment	1981	1983	1986
	-------all figures in millions--------		
Business information	$ 7,900	$ 9,700	$13,000
Computer services	22,400	32,000	52,500
Microcomputer software	70	468	2,325 H 1,750 M 1,250 L

H = high estimate; M = median or best estimate; L = low estimate

Source: Communications Trends, Inc. estimates and projections

Development and Marketing of Business/Professional Software

No program is more costly to develop than a broad-based business applications program in such fields as electronic spreadsheets or word processing. It would not be unusual for a Lotus Development Corp. or a MicroPro International to spend between $250,000 and $1 million on a single such program. VisiCorp's "VisiON," which features windows that permit the running of several applications programs at once, cost $10 million to develop. With budgets of this size in prospect, it is no wonder that major business/professional software companies have received sizable infusions of venture capital or else are preparing to go public to provide additional funds (as well as to provide a handsome payoff to the principals of such firms). Companies that have raised money in private or public markets are:

. Lotus Development, which raised $4.2 million in venture capital and which later went public by selling more than $45 million in common stock;

. Perfect Software, which received more than $3 million in venture capital in two stages;

. Ashton-Tate, which went public in November 1983, raising $15 million from sale of stock;

. Software Publishing Corp., which took in more than $1 million in venture capital in 1982;

. Innovative Software, which went public in September 1983, raising more than $4 million.

These infusions of capital permit software publishers to carry on development both internally and through the licensing of programs from outside creators. In the case of an already established program, like "dBASE II," the price of such a license or an outright acquisition is huge. As previously mentioned, Ashton-Tate paid more than $8.4 million to secure all rights to "dBASE II" from its creator, Wayne Ratliff.

Bestselling Business/Professional Programs

The bestselling business/professional programs have sold hundreds of thousands of copies, worth tens or hundreds of millions of dollars in customer outlays. The leaders include "WordStar," "VisiCalc," "SuperCalc," "PFS:File" and "dBASE II," with "1-2-3" destined to make the list of top sellers after barely a year on the market. Table 3.11 gives cumulative unit sales for these programs.

SUMMARY

Of the three microcomputer markets, the consumer is the most volatile; consumer purchases of computer hardware and software account for only a couple of percent of all spending on media and information products. The boom and bust cycle of video games is a sobering lesson for those who predict unrestrained growth.

Table 3.11:
Cumulative Unit Sales for Bestselling
Business/Professional Microcomputer Software, 1983

Program	Publisher	Cumulative Unit Sales	Value of Customer Purchases*
WordStar	MicroPro Int'l	800,000	$400,000,000
VisiCalc	VisiCorp	700,000	175,000,000
SuperCalc	Sorcim	350,000	140,000,000
PFS:File	Software Publishing	250,000	35,000,000
dBASE II	Ashton-Tate	150,000	105,000,000
1-2-3	Lotus Development	100,000	50,000,000
Totals, 6 leading programs		2,350,000	$905,000,000

*Customer purchases, calculated at list price, do not indicate what was actually spent to buy the programs. Discounts, and bundling of software with hardware, mean that actual customer spending is less than shown above. Publisher receipts would be, on average, not more than 50% of customer purchases and in the case of OEM licences to manufacturers, would be considerably less.

Source: Communications Trends, Inc.

The education market, smallest of the software markets, has more stability and less risk than other avenues, but it is difficult to see software accounting for more than 5% of instructional materials purchases within the next several years.

The business/professional software market is by far the largest, with customer spending already near $1 billion. Given the large size of the computer services market, at $32 billion, and the business/professional services market, at $140 billion, there is ample growth opportunity in this software segment.

4

THE ECONOMICS OF SOFTWARE PUBLISHING

The software business shares with other industries the goal of selling a product or service for less than it costs to produce it. What makes this process a bit trickier for software companies, however, is the extreme variation in the cost of developing the product. At one extreme is the game program developed by an author at home in his spare time, and turned over to a publisher for no advance; the development cost to the publisher is zero. At the other extreme is VisiCorp's "VisiON," the integrated windows software package that occupied a team of developers for two and a half years at a cost of about $10 million.

SOFTWARE DEVELOPMENT COSTS

Any generalizations about software will inevitably be wrong because there are exceptions and because the rules change almost daily. Nevertheless, the following guidelines are offered about the development costs for software:

. Entertainment programs, when developed by outside authors, usually involve modest advances, ranging from zero to $10,000. It's the exceptional title that involves an out of pocket cost to the publisher in the medium to high five figures.

. Education programs cost somewhat more, taking into account the combined sum of advance and reimbursement of programming or development costs. A typical range is $5000 to $50,000, although some programs cost even more.

. Business programs are where the biggest advance commitments are required by publishers. Major programs range in cost from $100,000 to $1 million; a rule of thumb seems to be that at least $250,000 is required to compete in the spreadsheet or data base or word processing market. A program like "VisiON" can obviously involve an investment running into the many millions of dollars.

Table 4.1 summarizes the range of development costs for each type of program.

Development Cost Per Unit Sold

As can be seen in Tables 4.2 through 4.4, the real development cost is not an absolute dollar figure, but a percentage of the publisher's net

Table 4.1:
Development Costs for Software

Category	Cost Range	Median
Entertainment	$0 to $75,000	$3,000 to $5,000
Education	$5,000 to $75,000	$15,000 to $30,000
Business	$10,000 to $1,000,000	$250,000 to $500,000

Source: Communications Trends, Inc.

Table 4.2:
Development Cost per Unit, Entertainment Program

Price = $35
Wholesale price = $15.75
Development cost = $15,000

	Unit sales			
	1,000	5,000	10,000	50,000
Cost per unit	$15.00	$3.00	$1.50	$. 30
As percent of wholesale price	95.2%	19.0%	9.5%	1.9%

Source: Communications Trends, Inc.

receipts. Consider the game that costs $3000 to develop, because the publisher was able to pay a token advance, or no advance at all. If it sells only 700 copies at $35, of which the publisher nets 45% or $15.75, the development cost per unit sold is $3000/700, or $4.29, which is equal to 27.2% of net receipts. On the other hand, a game costing $75,000 to develop but that sells 50,000 units really costs only $1.50 per unit, or 9.5% of its wholesale price. Table 4.2 shows development costs per unit at a range of possible sales for a $35 game that costs $15,000 to develop.

Development costs mount up quickly for major business productivity programs like "SuperCalc," "Multimate" or "PFS:File." Some companies are spending $500,000 and up on such programs, which requires either that the company have the cash flow for such investment, or that it raise the capital from outside investors. The most important reason for these high costs is the practice of maintaining large staffs of developers and programmers. Although such staffs help the software company control the timing and pace of development, such control comes at a high cost in absolute dollars.

Acquiring programs from outside developers for a royalty keeps program development costs to a known, manageable level, but means that software publishers are at the mercy of outsiders for the delivery of vital products. Few business software publishers have been willing to run that risk up to now. Table 4.3 calculates development costs per unit for business productivity programs at various sales levels. At 50,000 units, development cost per unit is only 3.4% of revenues. Lest one assume that such modest costs are unobtainable, there is always the example of Lotus Development Corp.: Lotus spent $940,000 on development in its first six months, but sold 60,000 units of "1-2-3," for revenues of $12 million and development costs per unit of $15. By year-end, unit sales were well over 100,000 units and development cost was only $9 per unit, or about 4% of wholesale receipts.

Development costs for education programs are closer to those of entertainment software than to those of business titles. The variation in unit sales is smaller, however, because of the near impossibility of having a huge seller in the school market; at present, 5000 copies is a highly satisfactory sale in this field. Table 4.4 shows a range of development costs per unit for an educational software title requiring a $25,000 budget.

MANUFACTURING COSTS

Manufacturing costs for software publishers tend to be similar whether the publisher is engaged in the consumer, education or business market. The principal expenses are:

- blank diskettes;
- disk replication;
- typesetting and printing of manuals;
- design and printing of packages and binders.

Table 4.3:
Development Cost per Unit,
Business Productivity Program

Price = $395
Wholesale price = $178
Development cost = $300,000

	Unit sales				
	1,000	5,000	10,000	25,000	50,000
Cost per unit	$300	$60	$30	$12	$6
As percent of wholesale price	168.5%	33.7%	16.9%	6.7%	3.4%

Source: Communications Trends, Inc.

Table 4.4:
Development Cost per Unit, Education Program

Price = $60
Wholesale price = $45
Development cost = $30,000

	Unit sales				
	1,000	2,000	3,000	5,000	10,000
Cost per unit	$30	$15	$10	$6	$3
As percent of wholesale price	66.7%	33.3%	22.2%	13.3%	6.7%

Source: Communications Trends, Inc.

At the lowest end, a publisher doing his own disk replication in-house and using the simplest kind of package might put out a single-diskette program for as little as several dollars apiece. At the high end, a business program consisting of two diskettes, looseleaf binder and box with four-color art, could cost $12 to $15 in small quantities (say, 250 to 500 at a time). Most programs would cost less than this--a range of $5 to $10 per unit is probably typical. The important thing is that manufacturing costs are usually less than 25% of revenues, even for publishers of $35 game programs. For business publishers, they are usually less than 15% of revenues and can be as little as 5%.

Table 4.5 provides a way of looking at manufacturing costs as a percentage of publishers' net receipts, for game and business programs. At all levels of sales, manufacturing costs are a far higher percentage of revenues for the game program than for the business title. The leverage from lower manufacturing costs as a result of increased sales, however, is much more striking for the entertainment software publisher than for the business software company. The manufacturing cost structure for educational software companies would be in between these two--costs may be somewhat higher in absolute terms than for entertainment programs, but lower as a percentage of revenues, given the higher selling prices for educational software.

MARKETING, ADVERTISING AND PROMOTION COSTS

Marketing costs will be the biggest expense for software publishers in 1984, and are rising more rapidly than sales. These expenses usually consume at least 30% of the sales dollar and can go as high as 50%. Of the publicly owned microcomputer software companies, for example:

- Ashton-Tate spent 38% of sales on selling, general and administrative expenses in the six months ended July 31, 1983;

- Innovative Software spent 39% on SG&A in its fiscal year ended June 30, 1983;

- Lotus Development devoted 33.1% to sales and marketing, and another 15% to general and administrative expense, in its six months ended June 30, 1983;

- Arrays Inc. spent 32.2% of revenues on selling, general and administrative costs in the nine months ended August 31, 1983;

- BPI Systems allocated 30.8% of revenues to general and administrative costs in its fiscal year ended March 31, 1983.

The only one of these companies to keep SG&A expense to under a third of revenues was BPI; its lower sales costs as a percentage of revenues stem from its heavy reliance on OEM sales to manufacturers. Nevertheless, in its fiscal 1984 year, BPI invested in increased sales personnel and advertising in order to sell more software under its own name; thus its selling expense is likely to rise as a percentage of revenues.

Table 4.5:
Manufacturing Cost as a Percentage of Revenues

A) Entertainment program
priced at $35;
Wholesale price = $15.75

	Unit sales				
	1,000	5,000	10,000	25,000	50,000
Manufacturing cost	$6.00	$4.75	$3.75	$3.25	$2.95
As percent of revenues	38.1%	30.2%	23.8%	20.6%	18.7%

B) Business program
priced at $395;
Wholesale price = $178

	Unit sales				
	1,000	5,000	10,000	25,000	50,000
Manufacturing cost	$15.00	$10.00	$ 9.00	$ 8.25	$ 7.75
As percent of revenues	8.4%	5.6%	5.1%	4.6%	4.4%

Source: Communications Trends, Inc.

One important element of marketing expense is the cost of establishing and maintaining a national sales force; this cost can run to $500,000 for as few as half a dozen people--and into the millions for a larger staff including branch offices. Another big expense is exhibits at trade shows like the Comdex and Consumer Electronics shows. One medium-sized business software company spends a million dollars a year just to be at eight shows.

Of all marketing costs, those showing the fastest increase are advertising and related promotion expenses. Lotus Development Corp. spent more than $1 million on advertising in launching its integrated software program "1-2-3" in late 1982 and early 1983; this highly successful approach is widely credited with ushering in a new level of promotional awareness on the part of leading software companies. Firms trying to break into the business have become convinced that a large-scale advertising campaign is the sine qua non of effective market entry.

Ten different software publishers spent $700,000 to $2.4 million each on advertising in the computer and business press in 1983 (see Table 4.6)--and these figures do <u>not</u> include either newspapers or consumer magazines like

Table 4.6:
Nine Month and Projected 1983 Space Advertising
Expenditures of Leading Software Companies

Company	9 Mos. 1983	Projected 1983
Lotus Development	$ 1,538,000	$ 2,350,000
Microsoft	1,480,000	2,275,000
Ashton-Tate	1,272,000	1,950,000
MicroPro	1,265,000	1,950,000
Digital Research	937,000	1,450,000
Software Publishing	678,000	1,050,000
Peachtree	655,000	1,000,000
Sorcim	640,000	1,300,000
Spinnaker	482,000	1,000,000
H&E Computronics	468,000	725,000
Total, 10 companies	$9,415,000	$15,050,000

Source: 9 month figures compiled and copyrighted by Adtrak, Inc., Goldendale, WA; 1983 projections by Communications Trends, Inc.

Time and Newsweek. When these expenditures are added in, along with the in-house costs of producing and managing these advertising programs, it is clear that leading software publishers are moving toward devoting 7% to 10% of sales to advertising. This is a higher percentage than is spent by leading consumer packaged goods companies like Procter & Gamble and General Foods.

The business software publishers do far more advertising than their educational and consumer counterparts, which should come as no surprise, given their much higher sales. Among the latter companies, Spinnaker has been particularly aggressive; it is the only non-business software company to make the top 10 software ad spenders in 1983 (Table 4.6).

PROFITABILITY OF SOFTWARE PUBLISHING

It is apparent from the brief history of microcomputer software publishing that a successful company can reap windfall profits in this field. Pre-tax margins of 25% to 30% are obtainable, and any company not satisfied with such a target can always aim to match the enviable achievement of Lotus,

which in its first nine months earned an astounding 47.7% before taxes.

Table 4.7 provides financial results of five publicly owned microcomputer software houses: Arrays, Ashton-Tate, BPI Systems, Innovative Software and Lotus Development Corp. Pretax margins ranged between 17.3% and 47.7% of revenues; the weighted average for all five companies (total pretax profits divided by total revenues) was 42.3%.

Of the five, only Arrays Inc. is primarily a consumer software publisher, although it is also active in the business market; the other four are all business software companies. Although there is little available evidence about the profits of the educational and consumer software publishers, one can assume that in general they are not as high as those of the business publishers. The consumer and educational publishers are smaller and because their products carry much lower prices, manufacturing expenses consume a higher proportion of revenues.

Still, the example of BPI Systems, which netted almost 46% pretax in its fiscal 1983 on only $6 million in revenues, demonstrates that a software publisher need not be a $30 million or $60 million company in order to earn high profits. It is perfectly possible that firms like Spinnaker, Infocom and Epyx in the consumer market, or Milliken and Sunburst in the school market, are earning attractive profits today, although in the absence of audited figures there is no way to be sure.

Table 4.7:
Pretax Profit Margins for Five Publicly Owned
Microcomputer Software Companies

Company	Period	------in thousands------- Revenue	Pretax profit	Pretax margin
Arrays	9 mos. ended 8/31/83	$ 4,789	$ 1,559	32.6%
Ashton-Tate*	6 mos. ended 7/31/83	14,868	5,404	36.3%
BPI Systems**	12 mos. ended 3/31/83	6,076	2,771	45.6%
Innovative Software	12 mos. ended 6/30/83	1,685	292	17.3%
Lotus Development	9 mos. ended 9/30/83	29,103	13,887	47.7%
Total, 5 companies		$56,521	$23,913	42.3%

*on a pro forma basis, which excludes results of Ashton-Tate's distribution operations, which were divested in spring 1983 **includes $397,000 in interest income; operating profit was $2,374,000, equivalent to an operating margin of 39.1%

Source: Calculated by Communications Trends, Inc. from company reports

Future Profitability of Software Publishing

Software publishing is too new for observers to know whether current profit margins will continue. When a company like Lotus has barely a year of operations under its belt, one must be wary of declaring it a bona fide success, however spectacular that first year was.

One fact that could keep profits growing is the steady expansion in the number of microcomputer users in all markets--consumer, educational and business. For the last three years the number of such users has been almost doubling annually. Even a growth rate of 30% to 50% provides built-in sales increases for the established publishers. As their unit sales increase for existing software titles, development costs that were previously made get spread over a wider customer base, and profits increase, sometimes dramatically.

But several trends will act as a brake on future profits, including:

. the growing oversupply of publishers and software titles, which is reflected in an inventory buildup that puts pressure on prices;

. the need to boost marketing expenditures faster than sales, in order to maintain visibility in the eyes of both customers and resellers (distributors and retailers). Publishers of somewhat older software titles may especially need to make these marketing investments to ward off the inroads made by newer and perhaps more versatile software.

. the higher costs of new program development, as successful independent developers demand better terms, and as companies are obliged to pay their in-house programmers more money in order to keep them on the staff.

On balance, it is reasonable to conclude that profit margins will decline in the coming years. Nevertheless, certain very successful companies will be able to match the exceptional results demonstrated by the leaders up to now.

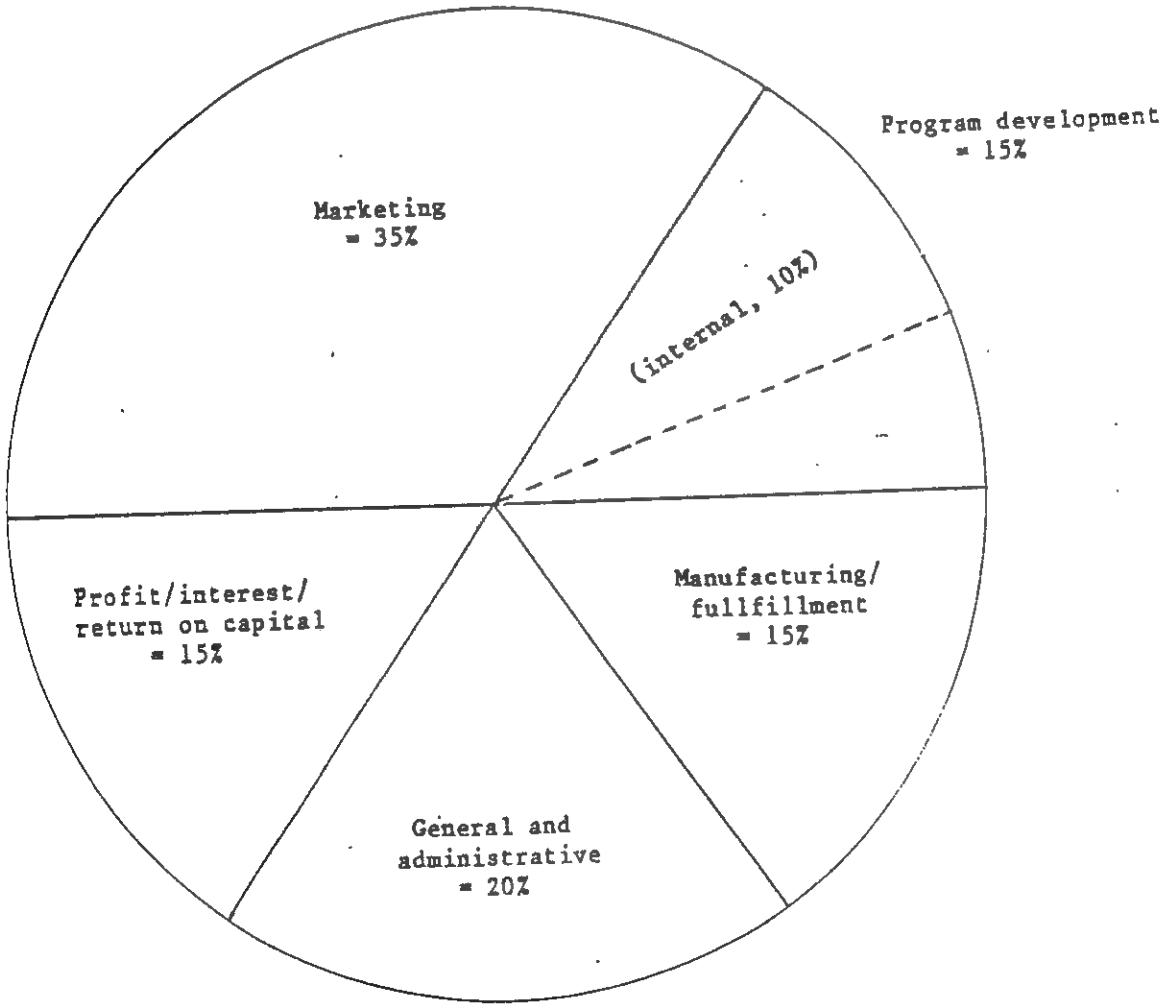
COST AND PROFIT STRUCTURE FOR SOFTWARE PUBLISHERS

From the foregoing discussion, one can estimate that cost and profit ratios for established software publishers fall within the following ranges:

development costs/royalties	10% to 25%
marketing	25% to 40%
manufacturing	5% to 25%
administration and overhead	15% to 30%
profit/return on capital	10% to 45%

Figure 4.1 shows typical ratios in pie-chart form for business/professional software publishers.

Figure 4.1:
How the Business/Professional Software Sales Dollar Gets Allocated



Source: Communications Trends, Inc.

SUMMARY

Development costs for microcomputer software vary enormously, from a few thousand dollars for low-priced games to hundreds of thousands, even millions of dollars for business applications programs. The appropriate yardstick is not the absolute cost, but cost per unit sold.

Manufacturing cost can be 15% to 25% of revenues for entertainment software companies, but as little as 5% for publishers of high-priced business programs.

Marketing costs are increasing for all software publishers and often consume 35% or more of the sales dollar. The rise in advertising and promotion budgets has been particularly sharp.

Pretax profits for the most successful software publishers, like Lotus Development and BPI Systems, have reached more than 40%. In the long run, competition from new entrants and expected price cutting should reduce these margins to more realistic levels.

5

THE FUTURE OF SOFTWARE PUBLISHING

The future of software publishing depends on some factors within the control of software companies, and on some that are totally beyond that control. Factors under the control of the software publishers range from the quantity of new titles issued, the formats in which they are published and their prices, to the efficiency of programs for achieving business or personal goals. Indeed, no other attribute of software is more important than its potential for bringing about productivity gains in knowledge work--writing, calculating, planning, controlling and managing. As long as software creators continue to produce intellectual breakthroughs of the sort represented by "VisiCalc" or "WordStar" or "1-2-3," the industry has a fine future.

But a number of factors are out of the hands of software companies, or are susceptible to their influence to only a small degree. For example, software publishers can't determine the answers to questions such as what kind of hardware will be developed; which companies (and formats) will remain in--and dominate--the personal computer businesses, and which will fall away; and most importantly, what will be the ultimate appeal of the microcomputer to business, educational and individual customers. These three important markets will be discussed in turn.

CONSUMER MARKETS

Although 6 million computers were in U.S. homes by the end of 1983, the evidence is not yet persuasive that the computer has become a mainstay of family life similar to the refrigerator or the record player. For all their genuine appeal, home computers have also been a novelty and fad. Low prices have enabled parents to buy them as toys without committing to their use--which means, without becoming regular software buyers. An underlying motivation has been parental fear and guilt about having their children fall behind in the dawning computer age; this is fine as a stimulus to hardware sales, but not much use in promoting software purchases.

The chaotic state of the home computer market in the last quarter of 1983 testifies to pervasive confusion about the role of computers for consumers. Texas Instruments and Warner Communications have lost hundreds of millions on their home computer and related businesses; Coleco has encountered delays and technical problems with its Adam system; even Commodore, the overall sales leader, has suffered from production shortages and a sometimes excessive reject rate.

In this situation it is no wonder that software publishers have rejoiced over the entry of IBM into the home market in the first quarter of 1984 with its PCjr. Publishers and retailers can count on IBM to produce a decent machine and to support it with extensive advertising and promotion. Nor is there any doubt that IBM has the financial resources and commitment to continue in the business.

The fundamental question remains, however, whether millions of consumers will rush to plunk down $669 for the basic PCjr model, or $1329 for the advanced model with disk drive and MS-DOS. At that price, PCjr is not a mass consumer item, and it is clearly overpriced compared to competitive models from Commodore, Atari and others.

The lure of the consumer market for software publishers is the lure of a large installed base: If 10 million household consumers own computers and spend an average of $100 per year on software, the market is worth $1 billion in software purchases. As of January 1984, however, neither of these conditions exists: Ownership is barely half of 10 million, and owners give no evidence of spending $100 per year on software on a recurring basis. (The new computer owner may well spend more than $100 on software at the time of purchase and in the next several months--but if he doesn't keep up his spending, there is no predictable, continuing home software business.) Meanwhile, more so than either education or business, the consumer software market is vulnerable to ruthless price cutting and inventory clearances on the part of publishers, distributors, and retailers holding excessive stocks. The same thing that happened with Atari VCS video game cartridges--for which retail prices fell from $35 to, in some cases, under $5 in less than a year--could happen with entertainment computer software. Because of their small size and limited capital, companies like Infocom, Sierra On-Line and Broderbund are ill-placed to endure this kind of market turbulence, should it come about.

EDUCATIONAL MARKETS

With computer software, as with other information and communications products, the education market exhibits stability and predictability. School budgets do not vary greatly from one year to the next; the adoption of microcomputers as classroom fixtures appears to be a long-term trend; favorable terms for the acquisition of hardware frees more money to buy software.

The main problem is that micros have, as yet, no defined role in the school curriculum. Many are used to learn about computers, a worthy activity but not one that requires much software. Others have been used to transpose drill-and-practice in math or spelling from the workbook page to the video screen, without necessarily adding any pedagogical value.

To date the educational software field has lacked the kind of breakthroughs represented by, say, "VisiCalc" in the business market or text adventure games like "Deadline" in the consumer market. The lower unit sales potential in the school market, where 10,000 copies is exceptional, is not enough to justify investments in single titles running into the hundreds of thousands of dollars. Nevertheless, major educational publishers like SFN,

Scholastic and Houghton Mifflin seem committed to software; they possess the requisite development skills, finances and marketing abilities, although there is always the danger of over-investment compared to realistic market size. Smaller companies like Sunburst and Milliken have plenty of opportunities in the school market, because they are able to develop programs for less than the big firms, and because direct mail is a viable way to sell titles priced at $50 to $150.

BUSINESS/PROFESSIONAL MARKETS

Business/professional customers spent an estimated $936 million on microcomputer software in 1983, and should spend more than $1.6 billion in 1984. This is the significant software market at present, and there is no denying either its fundamental validity or long-term potential. Nor is it a market that is controlled by its present leaders. Microsoft, VisiCorp, Lotus Development and others enjoy a commanding, even preeminent position, but from the short history of the industry, one must conclude that there are many software breakthroughs yet to be made, and consequently, plenty of opportunities for entrepreneurs, new companies and companies from other fields.

The dangers in business/professional software publishing are significant, however, and include:

- a rapidly building oversupply of programs, which must inevitably lead to price cutting and the abandonment of the field by many unsuccessful publishers;

- increasing costs of product development; major programs tend to consume most of the energies and finances of small companies, so that all their fortunes rest on just a couple of projects;

- far more complicated, costly marketing and distribution requirements than existed in the first several years of the industry. For new publishers, setting in motion national sales forces, full-scale advertising and promotion and other trappings of software marketing means spending of dollars with no assurance of return. In addition, the historical patterns of discounts in business/professional software are becoming incompatible with the new marketing and distribution costs.

When publishers did little advertising and promotion, it made sense to grant distributors 55% to 60% off list, and retailers 40% to 50% off list, and to rely on them for active selling of software. At a time when the publishers are much more active in calling on individual retailers, in selling to large corporations through their own sales forces, and in advertising software to the trade and to consumers, there is little economic logic in continuing to grant such high discounts. Even as the business software field grows, one can foresee a period of considerable turmoil, marked by rapidly shifting trade terms as well as by a continuing decline in average software prices.

One way for companies to deal with these issues will be through more specialization. This specialization can take several forms: specialization by type of software published, which already exists; or specialization by

business function, which appears to be on the way. Specialization by type of software would mean, for example, that Softword Systems, publisher of "Multimate," would stick to word processing programs, while Sorcim, creator of "SuperCalc," would stick to spreadsheets, instead of squandering money trying to move into each other's field.

Specialization by function would mean that software publishers whose real strength is product creation would become packagers, turning over finished programs to companies whose strength is marketing and distribution; the latter would increasingly eschew their own product development, finding it more economical to acquire programs from others. This analysis does not suggest that there won't be full-line software publishers who engage both in development and marketing--there will be, and their numbers should increase. But there is no way that the market will support hundreds of such firms, and companies whose strengths lie in one direction or the other will have to come to grips with that fact, or be forced out of the business altogether.

COMPETITIVE THREATS TO SOFTWARE PUBLISHERS

The rich promise of the software business is attracting a host of competitors, some with technical expertise, some with money, some with experience in allied fields. Among the kinds of companies that pose a threat to existing software leaders are:

. companies in the mainframe or minicomputer software field, like Applied Data Research, Informatics General, Cincom and Cullinet. (Other mainframe software companies have already invested heavily in the microcomputer software field: Computer Associates, which bought Information Unlimited Software; Management Science America, which owns Peachtree; and Wyly, which bought Financial Software of America);

. companies in business/professional publishing, like McGraw-Hill, Prentice-Hall, Dow Jones and Dun & Bradstreet. All four have acquired software companies in between late 1982 and the end of 1983, and can be expected to steadily increase their commitment to the field;

. companies in trade and mass market book publishing, like Simon & Schuster, Warner, Bantam and Little, Brown. Although these firms bring money, marketing abilities and a long history of dealing with outside authors and creators, their marketing strengths are not well matched to the software market at present; it will take a lot of money and experience for them to become proficient at software publishing, with no guarantee of success;

. companies from the entertainment/broadcasting/record business, like CBS, RCA, Warner. These firms bring financial resources and promotional flair, as well as access to mass merchandise outlets; their orientation to the consumer market does not fit the current profile of the software business, with its strong emphasis on business spending;

. companies from computer hardware development and manufacturing, like IBM, Apple, Tandy, Commodore. The software sales of these firms already exceed the revenues of the largest independent software firms. The hardware

manufacturers, however, develop little software on their own, and act primarily as distributors for the independents. This relationship isn't likely to change, although the ability of the manufacturers to invest heavily, and to compete with companies that they now buy from, must always be a consideration for the independent software publishers;

. companies in retailing and distribution. Ingram, a leading book distributor, has entered the software distribution field; so has McKesson Corp., a pharmaceutical product distributor which acquired SKU. Retailers getting into the field include B. Dalton and Walden Book Co., the two largest bookstore chains; Toys R Us, the largest specialty toy chain; and many others. None of these companies competes with software publishers; rather they constitute a market for publishers. As in other fields, however, there is the possibility of distributors and retailers creating their own private label products as a way of increasing margins or controlling sources of supply. Even if these newcomers do not push for private-label, their different ways of doing business are bound to bring about adjustments in the way software is bought and sold--particularly at a time when the software business is undergoing a transformation for other reasons.

THE NATURE OF SOFTWARE

Software has much in common with other media and communications industries, including books, records, video and online data bases. But it is sufficiently different from all of them to make generalizations based on other fields especially hazardous. In their concentration on a few large projects--with budgets to match--software companies resemble motion picture firms; in their dealings with outside creators and authors they resemble book publishers; and in their supplying of durable goods that aid productivity, they resemble tool or machinery companies. It is clear that the software business is already in the process of developing its own methods of operating and its own economic structure. Both will be influenced by, but not be beholden to, any existing industry.

TECHNICAL AND MARKETING CHANGES IN SOFTWARE

The software business marches in tune with advances in computer technology; it is also profoundly affected by changes in marketing and distribution. Software publishers have always had to adapt to the latest developments in computer hardware, whether these involved microprocessors, mass memory storage devices, video display terminals or graphics printers. Often, software itself has constituted the technological breakthrough, as with programs like "VisiCalc" or "1-2-3." In the next several years, software companies will wrestle with problems and opportunities created by:

. even faster microprocessors, including more widespread use of 32-bit processors in personal computers; the result will be to deliver more computing power at lower cost--but in the process, existing software will either have to be rewritten, or will become obsolete;

. a continued evolution in display technology, leading to higher resolution displays at reduced cost;

. voice-activated computers that respond to spoken queries and commands;

. the building of data communications networks that are faster, more comprehensive and easier to use, making it even more feasible to use micros as terminals for accessing remote data bases, or to exchange information with one another.

Among the developments with the potential to disrupt the present pattern of the software business, none has attracted more attention than the issue of software downloading or teledistribution. Teledistribution refers to the transmission of a program over a telecommunications circuit to a single recipient (as in an individual's communication with a remote data base), or to its broadcasting to a number of recipients simultaneously. Such transmissions can be aimed either at final customers, or at retailers who will receive and resell the transmitted program.

The appeal of downloading is its speed and apparent simplicity: Why bother with replicating and storing program titles, and why make the investment in facilities to distribute them, if retailers or customers can order them on demand from the publisher?

There remain considerable technical problems with downloading, having to do with the difficulty of dialing up remote computers (including hard to use protocols and hardware incompatability), the real possibility of errors in transmission (which can destroy the entire value of a program), and the lack of sufficient capacity to handle a large volume of transactions. At present, however, the main problem with teledistribution is that it ignores both the economic and psychological realities of software publication and purchase.

The economic reality is that the physical replication and packaging of software is not by a long shot the most significant cost. As was discussed in Chapter 4, The Economics of Software Publishing, manufacturing often consumes less than 10%, and sometimes less than 5%, of the wholesale price of a business title. As a percentage of retail price, these costs become 5% and 2.5% respectively. From the consumer's viewpoint, therefore, even if downloading could reduce this replication and packaging cost by 80%, the effect on the overall price of a program would be negligible--as Table 5.1 illustrates. In this example, downloading through the retailer cuts the price to the consumer by only $8, and that assumes downloading is indeed less costly than physical distribution; today the reverse is probably true.

The only way to significantly reduce the price to the consumer is to eliminate the retailer or to severely reduce the discount that he receives. Downloading offers one method of direct sale to the consumer--but then, so does mail order selling via direct mail or space advertising, or direct sales to companies using sales people. In both cases, the publisher must incur substantial marketing costs to reach the consumer and to persuade him to buy the program. Downloading does not eliminate such costs; it only shifts some of them from the retailer to the publisher.

Table 5.1:
Economics of Teledistribution Compared to Retail and Mail Order Software Sales

Sales Method	Wholesale price	Manufacturing/ packaging	Retail markup	Price to consumer
Normal retail sales	$220	$(10)	$180	$400
Downloading via retailer	212	(2)	180	392
Downloading direct to consumer	212*	(2)	0	212*
Mail order sale	220*	(10)	0	220*

*For downloading and mail order sales, wholesale price and price to consumer are shown before the additional marketing expense incurred by the publisher to make the sale. Assuming a typical mail order selling cost of 25% to 33% of revenues, the selling cost will range between $70 and $110; thus the effective price to the consumer will be between $282 and $330.

Source: Communications Trends, Inc. calculations

The psychological realities of software publishing are even more compelling as an argument against downloading. Publishers want to control the appearance and presentation of their programs, since these physical attributes are the only way that the customer can gain an impression of what the program is, short of spending lots of time trying it out. To place a program in the hands of the customer without the publisher-designed package--not to mention without professionally done manuals--is to invite confusion and lost sales.

Furthermore, the software package is an opportunity for the software publisher to establish his imprimatur, just as the cover of a magazine or book offers the print publisher this opportunity. Publishers will resist being lumped together in any electronic distribution system that fails to preserve their unique identities.

SUMMARY AND CONCLUSIONS

There are ample opportunities in all areas of the software market, but most notably in business/professional software, the largest and most promising segment. The dangers that software companies face are the entry of well-financed competitors and the prospect of corrosive price competition as a result of an oversupply of programs.

Competitors will enter the software business from many different fields, among them business/professional publishing, mainframe software, the

entertainment industries and computer manufacturing. The most serious competition, however, will continue to come from within, as programmers and developers break away to form new companies. This process is a continuing phenomenon and may act as a brake on any software company becoming very large.

No issue will be more difficult for successful software publishers to deal with than the question of compensation for software developers; such compensation must be fair to creators but must also permit publishers to earn significant profits. The software business requires high margins as the reward for the very high degree of risk that is inherent in the field.

Along with the question of compensation for developers is the equally knotty one of marketing and pricing software, including appropriate discounts to intermediaries. The need in this regard is to work out prices, marketing costs and discount structures that permit a continuing, robust level of profitability without exposing publishers to ruthless price cutting on the part of competitors.

No one can give the names of the software companies that will be the shapers and leaders of the industry over the next five years, but it is not difficult to describe the characteristics of those leaders. The leaders will be those publishers that have successfully worked out solutions to these twin challenges of developing first-rate programs on an on-going basis, and of marketing them in the most efficient manner possible.

6

PROFILES OF LEADING AND REPRESENTATIVE SOFTWARE DISTRIBUTORS, COMPUTER AND SOFTWARE RETAILERS, AND SOFTWARE PUBLISHERS

The following section contains profiles of more than 55 organizations involved in the distribution, retail sale or publication of microcomputer software. The section is divided into three parts:

- Part I, Software Distributors
- Part II, Computer and Software Retailers, Including Franchisers
- Part III, Software Publishers

PART I: SOFTWARE DISTRIBUTORS

Companies covered in the profiles on the succeeding pages are:

- Micro D
- SKU
- Softeam
- Softsel
- Software Distribution Services.

These five companies account for the majority of sales made through independent distributors.

MICRO D INC.
17406 Mt. Cliffwood Circle
Fountain Valley, CA 92708
714-540-4781

Geza Csige, chairman; Lorraine Mecca, president; Godfred Otuteye, chief financial officer; William Brail, vice president, sales; Michael Shea, vice president, marketing

Micro D was founded in 1979 and as of fall 1983 ranked as one of the two largest independent distributors of microcomputer hardware and software. Its growth has been extremely rapid, with sales rising from $3.5 million in fiscal 1980 to $25.3 million in fiscal '82 and to $71 million in fiscal '83, ending October 31. Net income was $1.1 million in '83.

Micro D distributes more than 4000 products to more than 3000 retail accounts. Among the principal vendors whose products it carries are Hayes, Nippon Electric (NEC), Dysan, Microsoft, MicroPro, Digital Research, VisiCorp and, as of October 1983, Lotus Development Corp.

In its fiscal 1982, 31% of Micro D's sales came from software (mostly for Apple and IBM computers); the software percentage has been steadily rising. In 1983 Micro D started up, then folded, a family computer magazine, Micro Discovery, taking a pretax loss of more than $1 million on the venture. In July 1983 the company went public by selling 1.7 million shares at a price of $16 per share through Merrill Lynch and L.F. Rothschild.

SKU
(subsidiary of McKesson Corp.)
2600 Tenth St.
Berkeley, CA 94710
800-227-1118; 415-848-0802

Robert Brownell, president; Robert Goldberg, vice president, sales

SKU began operations as an independent software distributor in August 1981 as a spinoff of DK Marketing; it was founded by Donald Kingsborough, who later moved to Atari, and Brownell. In October 1983 the company agreed to be acquired by McKesson Corp., a distributor of pharmaceutical and health care products, wine and spirits and chemicals. McKesson had revenues of $4 billion and net income of $56.5 million in fiscal 1983.

SKU emphasizes distribution to mass merchandisers such as Service Merchandise, Child World and Macy's. It serves more than 2500 retail outlets and stocks more than 1500 software titles.

SKU was projecting revenues of $25 million in fiscal 1984, which began April 1; that would be approximately double the revenues in the previous fiscal year. In expanding software sales, McKesson's strengths in reaching drugstores, supermarkets and other mass merchandisers were expected to be a significant asset. McKesson, based in San Franciso, serves 14,000 retail outlets through its Drug & Health Care Group, which had revenues of $2.2 billion and an operating profit of $56 million in fiscal 1983, ended March 31.

SOFTEAM INC.
(formerly Software Distributors)
10023 W. Jefferson Blvd.
Culver City, CA 90230
800-421-0814; 213-204-6620

Mark Vidovich, president; Linda Johnson, executive vice president; Hal Rothberg, vice president, marketing; Robert Shumate, vice president, sales

Softeam was founded in mid-1981 by George Tate and Hal Lashlee. It was originally called Software Distributors, and was part of an umbrella company, Software Plus, Inc., that also included Ashton-Tate. When Ashton-Tate was preparing to go public in mid-1983, Softeam was sold back to its founders.

The third-party distributor concentrates on business programs, though it also stocks entertainment and educational titles. In late 1983 it carried more than 2200 titles, of which 1200 were business/professional. Programs cover more than 35 machine formats, and Softeam does its own conversion of programs for machines such as the Digital Rainbow 100, Televideo, Sharp and Epson. In late 1983 Epson signed an agreement to purchase $1.2 million in software from Softeam, the largest single such sale, according to Softeam.

Softeam employs more than 100 people, is adding U.S. sales offices in other cities and beginning in 1984 will distribute software in the U.K. through W.H. Smith, the magazine, book and stationery wholesaler and retailer. Softeam was projecting revenues of more than $20 million in 1983.

SOFTSEL COMPUTER PRODUCTS INC.
546 N. Oak St.
Inglewood, CA 90302
213-412-1700

David Wagman, chairman; Robert Leff, president; David Blumstein, executive vice president, sales; Scott Hillman, vice president, product services; Bruce Cummings, director of marketing

Softsel was founded in 1980 by Leff and Wagman as a part-time operation out of a garage. The first full-time employees were hired in January 1981. By mid 1983, the company employed more than 200 people and was distributing more than 3000 software products to more than 4000 dealers. Sales have grown rapidly from $8 million in 1981 to $35 million in 1982, and to an estimated $85 million in 1983, making Softsel the leading independent distributor.

Facilities include warehouses in Inglewood, Chicago, and Fairfield, NJ. Almost all of the company revenues come from software products, with accessories, supplies and books contributing a minor amount.

Softsel carries software from all major vendors, including Microsoft, MicroPro, VisiCorp, Peachtree, Sierra On-Line, Broderbund, Software Publishing Corp., Sorcim and dozens of others. Its product evaluation staff considers more than 300 new product submissions per month. In 1983, business/professional software was estimated to account for about 80% of total software revenues, with entertainment software contributing most of the balance.

SOFTWARE DISTRIBUTION SERVICES
1280 Main St.
Buffalo, NY 14209
800-462-2202

Franklyn S. Barry Jr., chief executive; Gerald Lippes, chairman; Ronald Schreiber, president; John Noll, vice president, sales

Software Distribution Services began in early 1982 as an offshoot of a planned chain of retail computer stores. In 1983 it raised $2.2 million in venture capital with which to expand, from investors led by Oppenheimer & Co., and also announced the availability of a $3 million line of credit. As of late 1983 it had approximately 55 employees and served 2000 retailers, of whom 75% were independent computer stores and the balance were mass merchandisers. Most accounts are in the eastern U.S., with sales offices in New York City, Philadelphia, Atlanta, Orlando, FL and Boston. New offices and warehouses are planned for Chicago, Dallas and Toronto in the first half of 1984.

SDS carries more than 3500 products from 150 suppliers, including business, educational and entertainment programs. In addition to carrying products of major software suppliers, SDS also introduced a private-label line of blank diskettes and surge protectors under the brand name, The Winners. It offers retailers 40% off, rising to a maximum of 50% based on volume purchases. Company revenues were estimated at less than $5 million in fiscal 1983, ended February 28, but the company was projecting $15 million in sales in fiscal 1984.

PART II: COMPUTER AND SOFTWARE RETAILERS, INCLUDING FRANCHISERS

The following section covers some of the leading computer and software retailers, including the franchisers. Companies profiled in the succeeding pages are:

- CompuShop
- Computer Factory
- ComputerCraft
- ComputerLand
- Entre Computer Centers
- Inacomp
- The Program Store
- Programs Unlimited
- Softwaire Centers International
- Software City
- Tandy/Radio Shack

COMPUSHOP
1355 Glenville Dr.
Richardson, TX 75081
214-783-1252

Warren Winger, chairman; James Schuster, president; Joe H. Harmon Jr., vice president, merchandising

CompuShop was founded in February 1977 under the name Computer Shops Inc. and changed its name in May 1978. Originally designed to serve the computer hobbyist, CompuShop has shifted its emphasis to the business professional, along with many other retailers. The company went public in May 1983, selling 1.25 million shares (400,000 sold by shareholders) at $8 per share.

As of late 1983, CompuShop had 39 stores open, with another 35 expected to open in 1984. Stores range from 800 to 3800 square feet and are located in downtown office complexes and suburban shopping centers. It has expanded from its Texas base to buy stores in California, Michigan and Indiana.

CompuShop purchases hardware and software centrally from some 100 suppliers, although Apple, IBM and Epson represent more than 60% of dollar sales. Software accounts for 15% of dollar volume.

Net income for 1983, ended October 31, was $1.1 million, up from $228,500 the previous year, on revenues of $34.9 million, up from $14.5 million.

COMPUTER FACTORY INC.
485 Lexington Ave.
New York, NY 10017
212-687-5000

Jay Gottlieb, president; Fred Jackson, vice president, operations; John Merson, vice president, marketing

Computer Factory is the oldest and largest independent computer retailer in the New York metropolitan area, with seven stores as of year-end 1983; revenues were $14.6 million and net income was $383,000 in the fiscal year ended September 30. The company went public in April 1981 and raised an additional $6 million in a public offering in May 1983. Proceeds are earmarked for acquisition of 20 to 30 stores over the next two years.

Apple had been Computer Factory's main line, accounting for over 50% of sales through mid 1983. With the addition of the IBM PC in late summer, the company is now aiming for a mix of one-third Apple, one-third IBM and one-third other.

Its stores range in size from 1200 to 4300 square feet and cater to business customers; a software and accessories store was opened as an adjunct to its main Lexington Ave. outlet in 1983. Its eighth store was due to open in early 1984. Computer Factory advertises regularly in New York area media, both with company co-op funds and its own budget; advertising averages 5% of sales.

COMPUTERCRAFT INC.
1616 S. Voss Rd., Suite 900
Houston, TX 77057
713-977-8419

William E. Ladin Jr., chairman; Avery More, president; Harry Berkowitz, senior vice president, merchandising and marketing; Phyllis Cohen, vice president, retail operations

ComputerCraft began operation in 1977 and by the end of 1983 was operating 33 computer stores mainly in the southwest; its emphasis is on the business market. It has expanded primarily by acquiring existing stores; in April and June 1983, the company acquired 11 stores in Houston, Dallas, San Antonio and Ft. Worth. In July ComputerCraft went public by selling 750,000 shares at $9.50 per share. Its expansion policy is to acquire stores that are already qualified as Apple and IBM dealers.

ComputerCraft's principal lines are IBM and Apple products; Osborne represented 9% of sales until that company's bankruptcy filing. Software accounts for 7.5% of sales and the company is looking for ways to expand its software revenues; it opened an educational software outlet in Houston in spring 1983 to test the market. ComputerCraft intends to expand its purchase of software directly from publishers, rather than through distributors, in order to earn the best possible gross margins. In the six months ended October 31, 1983, ComputerCraft had revenues of $24.6 million and a net loss of $42,000.

COMPUTERLAND
30985 Santana St.
Hayward, CA 94544
415-487-5000

William Millard, founder, chairman; Ed Faber, vice chairman

ComputerLand is the best-known name in computer retailing, with the possible exception of Radio Shack. It operates no stores itself but is a franchiser and distributor; by the end of 1983 it had more than 580 franchisees around the world. Sales of all franchisees were estimated at $1 billion in ComputerLand's fiscal 1983, ended September 30, and are projected to rise to $1.5 billion in fiscal 1984. Franchisees pay a $75,000 franchise fee and 8% of gross monthly revenues, resulting in franchising revenues of $25.5 million in 1982, rising to more than $80 million in 1983.

The Apple II was the original product that propelled ComputerLand stores into public notice, but the fastest growing product line is now the IBM PC and PC-compatible units like Compaq. ComputerLand evaluates centrally, and buys for its franchisees, both hardware and software. It purchases more than 3000 items from more than 100 suppliers.

Its importance to business software publishers may be gleaned from a single fact: in the six months ended June 30, 1983, 37% of Lotus Development Corp.'s sales of "1-2-3"--a sum amounting to $4.5 million--were to ComputerLand.

ENTRE COMPUTER CENTERS
1951 Kidwell Dr.
Vienna, VA 22180
703-556-0800

Steven B. Heller, president; James J. Edgette, vice president, marketing; James E. Allen Jr., director of merchandising and distribution

Entre is the second largest franchiser of computer retail stores, though far behind ComputerLand. As of the end of 1983 it claimed 110 franchises open and another 189 contracted for. The Entre corporate-owned store, in McLean, VA, opened in October 1981 and the first franchise in June 1982. In late 1983, Entre raised $13 million from a public offering of 1.1 million shares at $12 per share. Shareholders also disposed of 300,000 shares.

Entre franchisees emphasize business computer systems, including IBM, Compaq and Digital Equipment Corp. computers, and software from Lotus, MicroPro and others. IBM products account for 50% of retail sales for Entre stores overall.

Franchisees pay an initial fee of $40,000, a royalty of 8% of gross revenues and a contribution to a national advertising fund of 1% of revenues.

In its fiscal 1983, ended August 31, Entre had net income of $903,182 on revenues of $8.6 million; not included in revenues were product sales to franchisees totaling $27.9 million.

INACOMP COMPUTER CENTERS INC.
1824 W. Maple Rd.
Troy, MI 48084
313-649-0910

Joseph Inatome, chairman; Rick Inatome, president, chief executive officer; M. Leonard Simon, executive vice president; Kenneth Scholbloher, president, Inacomp Technical Services, Inc.

Inacomp has operated retail computer stores since 1976 and has served franchised outlets since 1980. As of late 1983, the company had 10 company stores (seven in the Los Angeles area, three in Detroit) and 12 franchises in Michigan. Four of the California outlets were added in July 1983 as a result of the acquisition of Computer City; three were opened subsequently. Franchisees pay a fee of $14,000 to $60,000 and royalties of 3% to 7%. In late 1983 Inacomp registered a public offering with the Securities & Exchange Commission, attempting to sell 1.1 million shares at between $12 and $14 per share.

Inacomp stores concentrate on the business market, with sales of Apple and IBM lines accounting for 65% of revenues. Stores carry business software from major suppliers such as Microsoft, VisiCorp Lotus and MicroPro.

In fiscal 1983, ended July 31, Inacomp earned $1.2 million on revenues of $36.7 million. Sales rose more than 50% to $11.3 million in the three months ended October 31, as net income increased from $109,000 to $421,000.

THE PROGRAM STORE
1945 Gallows Rd.
Vienna, VA 22180
703-556-9778

Mel Estrin, chairman; Ray Daly, president; Charles Abod, executive vice president; Gary Jonas, vice president; Ira J. Hamburg, president, Program Store Franchise Systems

Concentrating on the consumer rather than the business software market, The Program Store grew rapidly in 1983 with capital from Human Service Group, which took an interest in the chain early in the year. The Program Store began as a mail-order software business and opened its first store in Washington, DC in late 1979; success with that unit led to the opening of two more in the area, and then creation of a franchise division.

By late 1983 the chain had 20 stores, 11 company-owned. Aside from the Washington area, there are company stores in the New York, Philadephia and Chicago areas, and franchises in Boston, Denver, Orlando, FL and Oklahoma City. Another 20 stores are expected to open in the first six months of 1984, half of them company-owned. The emphasis on company-owned stores sets Program Store apart from competitors like Software City and Softwaire Centers International. Revenues for a successful store range between $500,000 and $750,000 per year. Initial investment for a franchisee runs $90,000 to $150,000, including a $15,000 franchise fee; royalty is 6% of sales plus 2% for advertising.

PROGRAMS UNLIMITED
125 S. Service Rd.
Jericho, NY 11753
516-997-8668

Richard Stanley, chairman; Richard Taylor, president; Frederick Zenna, chief operating officer; Don von Liebermann, vice president; Marvin Marcus, secretary/treasurer

Programs Unlimited began as a software-only retailer but quickly changed into a full-service retailer with an emphasis on the business market. Computers and software for the home market have been deemphasized as a result of price competition in that market segment. Programs Unlimited is primarily a franchiser, with 52 affiliates as of the end of 1983, though it also owns several stores itself. In 1982 Programs Unlimited went public; however, 45% of the shares are held by CutCo Industries. In its fiscal 1983, ended June 30, the company lost $479,600 on revenues of $6.6 million; it lost $212,000 on revenues of $2.4 million in three months ended September 30, 1983.

The investment to open a Programs Unlimited store ranges between $175,000 and $340,000; the franchise fee payable to PU is $25,000. Besides Apple, Franklin, Sanyo and Digital Equipment Corp. hardware, Programs Unlimited stores carry up to 2000 software titles, primarily business programs for accounting, payroll, word processing and other applications. Stores also carry programs for specific industries, such as construction, medical and dental practices, tax and legal practices.

SOFTWAIRE CENTERS INTERNATIONAL
9929 W. Jefferson Blvd.
Culver City, CA 90230
213-558-1144; 800-621-5060

Glenn Johnson, chairman; William Janeski, president; Raphael Cristy, product marketing manager; Robert Fick, vice president, finance

Softwaire Centers offers a turnkey software franchise. Stores are designed inside and out, stocked with inventory and benefit from advertising created and placed by SCI. Franchisees receive classroom and in-store training, medical and dental insurance and other central benefits. The franchise fee is $25,000; total costs to open a new store are $160,000.

As of the end of 1983, 50 stores were open, with the largest concentration in southern California. SCI owns one store, on West Pico Boulevard in West Los Angeles, which is one of the largest individual software stores in the U.S. Franchised stores range in size from 1500 to 4000 square feet, with most at about 1500.

Product mix at SCI franchises is heavily slanted toward business and professional software, although some games are stocked. Books and magazines occupy a significant amount of floor space and can account for up to 25% of total sales. SCI deals with 60 to 70 software vendors but prefers to buy through its sister company, Softeam (formerly Software Distributors), which is owned by some of the principals in SCI.

SOFTWARE CITY
1415 Queen Anne Rd.
Teaneck, NJ 07666
201-833-8510

Shep Altshuler, chief executive officer; Mitchell Jacobs, chairman; Ray Jacobs, president

Software City's approach to franchising is akin to the bargain basement store: Keep costs low, sell high volumes of select low-ticket products and open as many outlets as possible. On the scale of initial investments in franchised computer or software stores, Software City ranks at the low end: Initial investment is only $40,000, with $18,000 in inventory and a $7500 franchise fee. The fee will rise substantially in May 1984.

As of year-end 1983 there were 65 Software City franchises open; new stores were opening at the rate of four per month. The company projects 150 franchises open by the end of 1984.

Approximately 70% to 80% of average store inventory is software; the balance consists of books, magazines and peripherals. The largest category of software is programs under $100, but the mix is changing, and some stores report that corporate accounts now represent 50% of sales. All software is discounted up to 20% off the list price. Stores are typically small, ranging in size from 800 to 1000 square feet, so the annual potential sales volume does not exceed several hundred thousand dollars per store.

TANDY CORPORATION/RADIO SHACK
1800 One Tandy Center
Fort Worth, TX 76102
817-390-3700

John V. Roach, chairman; Bernard Appel, executive vice president, marketing, Radio Shack; Robert Keto, executive vice president, operations, Radio Shack

Tandy is both a retailer and manufacturer of computers. Radio Shack has been synonymous with microcomputing for the hobbyist for years with a variety of TRS-80 models. Introduction of the Tandy 2000 model in fall 1983 is an effort to crack the corporate market with a machine using the MS-DOS operating system and offering limited compatability with the IBM PC. Tandy will go after the market with its national sales force but shipments will still be made through local Radio Shack stores. Radio Shack sells computers through 400 Computer Centers, 775 Radio Shack stores that have expanded computer departments (Plus centers) and regular Radio Shack outlets; 1984 should see the opening of 50 new computer centers and 100 Plus centers.

Radio Shack sells only Tandy computers, although the company has moved more aggressively into third-party accessories and software that are compatible with its TRS-80 line. The company is one of the largest advertisers of electronics products in the U.S., spending almost $200 million on advertising and promotion in fiscal '83, equivalent to 8.0% of sales. Tandy Corp. had revenues of $2.5 billion and net income of $278.5 million in that year. Computers accounted for $856 million of total revenues.

PART III: LEADING AND REPRESENTATIVE SOFTWARE PUBLISHERS

The following section contains profiles of more than 40 software publishers, including firms in consumer, educational and business segments. Companies profiled are:

- Addison-Wesley
- Arrays
- Ashton-Tate
- BPI Systems
- Broderbund
- CBS
- Cdex
- Computer Associates/ Information Unlimited
- Digital Research
- Dow Jones
- Dun & Bradstreet
- Electronic Arts
- Epyx
- Hayden
- Houghton Mifflin
- Infocom
- Innovative Software
- Lotus Development
- Management Science America/Peachtree
- McGraw-Hill
- MicroPro International
- Microsoft
- Milliken
- Minnesota Educational Computing Consortium
- Muse
- Perfect Software
- Prentice-Hall
- Random House
- Reader's Digest
- Scarborough Systems
- Scholastic
- SFN
- Sierra On-Line
- Software Arts
- Software Publishing
- Softword Systems
- Sorcim
- Spinnaker
- VisiCorp
- John Wiley & Sons
- Xerox Education Publications

ADDISON-WESLEY PUBLISHING CO. INC.
Reading, MA 01867
617-944-3700

Donald R. Hammonds, president; J. Larry Jones, executive vice president, Higher Education Group; Ann E. Dilworth, vice president, General Books Division; Royce Hargrove, project manager, School Division (Menlo Park, CA); David Geggis, vice president and director, electronic publishing; L. Brent Manssen, Applications Software Division

Addison-Wesley is an independent publisher of books and educational materials for elementary and high schools, colleges, industry and professional markets. Revenues were $114.3 million and net income was $5.6 million in fiscal '83. A-W's strengths lie in mathematics and the sciences as well as in computer books. Software publishing is divided among four divisions: general books, school, higher education and applications software.

Software for business and professional markets is marketed by the Applications Software Division, whose titles include "Micro-DSS/Finance" at $995 and "Micro-DSS/Analysis" at $495. Software titles from general books run the gamut from games to tutorial software; the el-hi division has basic skills courseware as well as programs in education management ("Bursar," at $195). The higher education division was scheduled to release its first software product in November 1983, a 15-disk program to be used in a college physics course. Software is developed by outside authors and marketed by software distributors, and school, college and trade sales forces.

ARRAYS INC.
Continental Software
11223 S. Hindry Ave.
Los Angeles, CA 90045
213-410-3977

James D. Sadlier, president; Henry Scheinberg, executive vice president, director, marketing; Henry Waldman, vice president, finance

Arrays is the parent company of Continental Software, a publisher of consumer and small business software, and The Book Co., a computer book publisher. In January 1984 it went public, selling 1.5 million shares at $8 per share; 425,000 were sold by individual shareholders. Thanks to success of its "The Home Accountant" program, Continental's revenues increased 224% to $4.9 million in the nine months which ended November 30, 1983; net income jumped 419% to almost $800,000. "Home Accountant," which is available for the IBM PC, Apple IIe, TI Professional, Commodore 64 and 14 other computers, contributed 41% of those revenues.

Other Continental titles include "F.C.M.," a mailing list program, "The Tax Advantage" and "Ultra File." A complete accounting series for small businesses is under development.

Arrays has 69 employees with three in-house developers. The company has arrangements with 12 outside programmers for new product development; it generally pays a royalty of 20% of net sales.

ASHTON-TATE
10150 W. Jefferson Blvd.
Culver City, CA 90230
213-204-5570

George Tate, chairman; David Cole, president; Charles Babbitt, executive vice president; Rodney Turner, vice president, product marketing; C. Wayne Ratliff, vice president, new technology

Ashton-Tate was founded in 1980 as part of Software Plus; the name was changed in May 1983. Most of its initial revenues came from distribution of third party software, but in the fiscal year ended January 31, 1983, more than 50% of its revenues came from sales of its own products--principally "dBASE II." In May 1983 the company spun off its wholesale distribution business to its shareholders, and in August 1983 it acquired all rights to "dBASE II" from Wayne Ratliff in exchange for $150,000, a $6.35 million promissory note and 392,000 shares of common stock valued at $2.1 million.

As of September 1983, Ashton-Tate had 234 employees, including 111 in product marketing, sales and support and 24 in product development. More than 80% of A-T's revenues in the six months ended July 31, 1983 came from "dBASE II," which has sold more than 150,000 units worldwide. "dBASE II" is a data base management system for creating, storing, editing and retrieving data bases and for generating reports. Company revenues were more than $29 million in the nine months ended October 31, 1983, with net income at more than $4 million.

BPI SYSTEMS INC.
3423 Guadalupe
Austin, TX 78705
512-454-2801

John A. Moss, chairman; Randall W. Ferguson, president; Kenneth DeBower, executive vice president, treasurer; Thomas O. Meadows, senior vice president, marketing

BPI Systems produces accounting and other applications software for microcomputers. It was founded in 1979 and until its fiscal 1982 year, most of its revenues came from programs for the Apple II. In that year BPI began producing software for Commodore and IBM computers as well. Most of BPI's revenues come from OEM sales or licenses with the major microcomputer manufacters. In its fiscal 1983, it sold or licensed 59,000 packages. BPI employed 111 people as of June 1983. The company went public in June 1982.

BPI's accounting software includes general ledger accounting; accounts receivable and accounts payable systems; and programs for payroll records, inventory control, job costing, professional time accounting, church management and personal accounting. Most of its software is developed by an in-house technical staff of 54 people. Programs under development include tax return preparation, medical and dental billing and financial forecasting.

Revenues were more than $6 million in its fiscal 1983, and were running at a rate of nearly $10 million in fiscal '84, ending March 31.

BRODERBUND SOFTWARE INC.

17 Paul Dr.
San Rafael, CA 94903
415-479-1170

Doug Carlston, president; Gary Carlston, vice president, director, program development; Cathy Carlston, marketing director; Tom Measday, vice president, marketing and sales

Broderbund, which offered some of the most innovative games for the Apple II and IIe family, broke new ground in 1983 with its introduction of the consumer version of "Bank Street Writer," hailed as the first low-cost but high-quality word processor.

Broderbund was founded in February 1980 by brothers Doug and Gary Carlston (the name means "brotherhood" in Swedish). It grew rapidly with Apple II games in the early 1980s and has since expanded to cover IBM, Commodore 64 and Atari programs; most games are $35. Bestselling programs include "Choplifter," "Seafox," "Serpentine" and "BSW," the last having sold an estimated 85,000 units at $70 list by early 1984.

In early 1984, Broderbund employed 70, with 12 in-house programmers working on conversions of games developed by outside authors. Revenues were $10 million in calendar 1983, $6.5 million to $7 million in fiscal '83, which ended in August, nearly double its sales in the previous fiscal year. The company had 60 programs on the market by the end of 1983.

CBS INC./CBS SOFTWARE

51 W. 52 St.
New York, NY 10019
212-975-4321

Thomas Wyman, president; Peter Derow, president, CBS Publishing Group; Edmund Auer, president, CBS Software (1 Fawcett Pl., Greenwich, CT 06836; 203-622-2500); Henry A. Kaplan, executive vice president

CBS is the largest media company in the U.S., with 1982 revenues of $4.1 billion and net income of $163.8 million. It formed CBS Software in early 1983 using the resources of the CBS Columbia and CBS Publishing Groups. The new unit expands on and replaces a video game/computer game unit formed within the Columbia Group in 1982.

The emphasis of CBS Software is on educational games and home productivity management programs, such as its "Goren: Learning Bridge Made Easy" at $80 and "Mastering the SAT" at $150. Several math programs are priced at $25. In conjunction with Children's Television Workshop, CBS is developing a major series of educational/entertainment programs for young children, due in 1984.

Almost all programs are developed by or licensed from outside creators, with the staff of CBS Software concentrating on program acquisition and evaluation, and on marketing. Programs are available through a variety of retail outlets; Columbia Group may sell them by mail. CBS Educational and Professional Publishing is also developing software for schools and college.

CDEX CORP.
5050 El Camino Real
Suite 200
Los Altos, CA 94022
415-964-7600

Stephen Brandt, chairman; Bruce Frisch, president; Carl Roetter, vice president, software development; Mark Belinsky, national accounts manager; John Noon, marketing manager

Cdex was founded in July 1982 with $2 million in venture capital to produce computer-assisted training products for the business and professional markets. The company uses outside experts in designing its products, but actual development of software is done in-house. The company created a "courseware development system"--called XPL--to aid in the production of computer-based training; it converts written manuscripts into computer code. Cdex employed 45 people as of late 1983, primarily instructional designers, computer scientists, administrative and marketing personnel. Company revenues were estimated at $4 million in 1983.

At the end of 1983 Cdex had 20 products on the market; it intends to release two to five training products per month in 1984. Existing titles cover: systems/computer literacy, business productivity, word processing, data base management, spreadsheet analysis, etc. Each Cdex title covers a specific product, e.g., "VisiCalc" or "Multiplan," and is usually priced at $60 or $70. Programs consist of interactive tutorials on computer disks.

COMPUTER ASSOCIATES INTERNATIONAL INC./
INFORMATION UNLIMITED SOFTWARE
125 Jericho Turnpike
Jericho, NY 11753
516-333-6700

Charles B. Wang, president; Anthony B. Wang, executive vice president

Information Unlimited Software (IUS), 2401 Marinship Way, Sausalito, CA 94965 415-331-6700; Stefan R. Bothe, president; Mark Farnell, director, marketing; Paul Chaison, vice president, research and development

For most of its existence, Computer Associates concentrated on developing and marketing systems software for IBM and IBM-compatible mainframes. Recently it has expanded into data base management systems, applications software and, with the acquisition of IUS in July 1983, microcomputer software.

Computer Associates licenses mainframe software to over 24,000 users, including some 75% of the Fortune 500 companies. It employs more than 950 people--including 105 at IUS--of whom more than 150 work in product development and 450 in sales and support. The IUS product line encompasses 10 titles, including its bestselling "EasyWriter" word processing program for the IBM PC, which has sold more than 50,000 units. Other programs include mailing and spelling programs and the "EasyBusiness" series in accounting and payroll. Computer Associates had revenues of $58.1 million and net income of $5.5 million in fiscal 1983, ended March 31.

DIGITAL RESEARCH CORP.
160 Central Ave.
Pacific Grove, CA 93950
408-649-3896

Gary Kildall, chairman; John Rowley, president; Stan McKee, chief financial officer; Richard Dixon, acting marketing director; Stephen Maysonave, vice president, sales and world trade

Founded in 1976, Digital Research Corp. is one of the oldest microcomputer software publishers, and its CP/M operating system is one of the most common today. Digital Research is expanding far beyond CP/M, however, with its consumer division and applications library, each begun in 1983.

In an apparent effort to reduce its reliance on CP/M (in the face of the success of MS-DOS from rival Microsoft), DRC has increased its efforts in graphics software and ancillary hardware (boards and add-on devices). Currently the company employs more than 450 people in six areas: operating systems, programming languages, programming tools, applications library, consumer division and ancillary hardware. More than 100 of the employees are software engineers.

Digital Research's traditional software strengths were operating systems and languages; in operating systems, it has upgraded CP/M with CP/M-86. However, DRC's major new emphasis has been on its applications library. Company revenues were estimated at $38 million in fiscal 1983.

DOW JONES & CO.
22 Cortlandt St.
New York, NY 10007
212-285-5000

Warren H. Phillips, chairman; Ray Shaw, president; William L. Dunn, vice president and general manager; Timothy Turner, director of marketing, Dow Jones Software; Eric Bradshaw, national sales manager, Dow Jones Software

Dow Jones is one of the leading suppliers of business information in the U.S. through the Wall Street Journal, whose circulation exceeds 2 million, Barron's, Richard D. Irwin, and its news and electronic information services. Revenues exceeded $850 million and net income topped $100 million in 1983.

Dow Jones' electronic publishing activities are centered in its Dow Jones News Retrieval division. DJN/R had 100,000 customers to its online retrieval service as of October 1983. Dow Jones' software publishing began in 1982. Titles such as "Dow Jones Market Analyzer" and "Dow Jones Market Manager" were developed by outside companies and sell for $300 to $700. The software offerings complement the News Retrieval service by enabling customers to perform stock market, company and portfolio analysis. Dow Jones markets the software through 19 independent manufacturers' reps and its own sales force of six people. In December 1983, Dow Jones acquired interests in two software companies: Software Ventures Inc., producer of the "Dow Jones Investment Evaluator," and Planning Economics Software, a developer of business software. In 1984 Dow Jones made an investment in Cdex, a producer of training software.

DUN & BRADSTREET CORP.
299 Park Ave.
New York, NY 10171
212-593-6800

Harrington Drake, chairman, D&B; Charles W. Moritz, president, D&B; James McCormack, chairman, McCormack & Dodge (Natick, MA); Frank Dodge, president, M&D; Robert K. Weiler, vice president, marketing, M&D

Dun & Bradstreet is the largest provider of business information services in the U.S., with 1983 revenues topping $1.5 billion; net income in 1982 was $142 million. Its three principal groups are: business information services (credit information, timesharing), publishing (trade magazines, directories, Moody's financial information) and marketing services (mailing lists, other). In 1983, D&B sold its Corinthian Broadcasting subsidiary to A.H. Belo for $606 million. Acquisition of National CSS and McCormack & Dodge in recent years indicates expansion by D&B into computer services and related fields.

McCormack & Dodge, which was acquired by D&B in March 1983 for $50 million, concentrates on the mainframe and minicomputer markets. McCormack & Dodge is a $50 million company employing about 600 people. Its most recent product, "PC Link," joins IBM PCs to IBM mainframes, enabling the PC user to tap M&D software systems such as its general ledger, accounts payable and human resource packages. D&B also inaugurated DunsPlus, a new company, in 1983. DunsPlus markets an enhanced IBM PC XT that includes "1-2-3," "Multimate," a modem and built-in software to access mainframe computers.

ELECTRONIC ARTS
2755 Campus Dr.
San Mateo, CA 94403
415-571-7171

William Hawkins, president; William Gordon, marketing director; David Evans, director of talent

Electronic Arts caused a big splash in the home market in 1983, as four of its titles made Billboard Magazine's bestseller list at the end of the year. EA shipped its first six titles in May 1983, releasing them in Apple, Atari and Commodore 64 formats.

Programs fall into three categories: entertainment, education and home management. All programs are disk-based. Among the best known is "Pinball Construction," developed by Bill Budge, which involved a significant advance and a large budget for promotion. Another top seller is "Julius Erving and Larry Bird Go One-On-One"; the two basketball superstars had a hand in designing the graphics. Entertainment and educational titles retail for $35 or $40, while home management programs, such as the word processor, "Cut and Paste," are $50.

Electronic Arts employs 40 people full time and works with 70 outside authors on program development. EA sells to distributors and retailers, and in early 1984 was working on getting its programs into major bookstore chains like Walden and Dalton.

EPYX INC.
1043 Kiel Court
Sunnyvale, CA 94089
408-745-0700

Michael V. Katz, president; John Brazier, vice president, sales and marketing; Robert Brown, vice president, product development

Epyx joined an elite group of software publishers in late 1983 with its first $2 million sales month, thanks to a number of bestselling computer games. Its bestselling "Temple of Apshai" has sold more than 100,000 units in four years. "Jumpman" and "Jumpman Jr," two recent entrants, have sold 50,000 units in less than a year. The five-year old company employs 35 people with 13 in-house developers.

Epyx concentrates on four areas: 1) strategy games of the Dungeons and Dragons type; "Temple" is one example; 2) action-oriented strategy games, such as "Jumpman"; 4) learning fun (the educational/recreational category), such as "Fun with Music," "Fun with Art" and "Fax"; and 4) arcade classics such as "Seawolf" and "Gunfight," licensed from Bally Midway.

Although Epyx has its own developers, it is increasingly relying on outside developers, such as its founder, Jim Connelly, who left in 1983 to form a new firm that licenses several games to Epyx; Ken Uston's new development group is also working with Epyx on "PuzzleMania" (to be released in 1984) and other titles.

HAYDEN PUBLISHING CO.
10 Mulhólland Dr.
Hasbrouck Heights, NJ 07604
201-393-6000

James Mulholland, president, Hayden Publishing; Oscar Rodriguez, president, Hayden Software Co. (Lowell, MA); Bruce Twickler, vice president, marketing; William Overhold, director, commercial products; Gail Rothenberg, director, home software

Hayden Publishing Co. is a leading publisher of computer magazines (Personal Computing, Computer Decisions and Personal Software) and books; its book company released more than 50 computer titles in 1983. Overall company revenues were estimated at more than $50 million in 1983. Hayden Software began as a component of the book company; in January 1982 it was spun off as a separate unit and moved to Lowell.

Hayden markets both commercial products, like the "ORCA/M" program used by programmers, and home software such as "Sargon II," a chess-playing program. The division incurred heavy losses in its startup phase, but was expecting to do better in 1983 and beyond. Most of its products are developed and refined by outside creators. New home software being introduced in late 1983 and early 1984 includes a word processing program, "The Writer" (to be priced at about $60 to compete with "Bank Street Writer"), a spelling checker and a basic spreadsheet. Hayden's bestsellers include "Sargon II" (10,000 to 12,000 sold as of October 1983) and "PIE:Writer" (5000 to 6000 sold).

HOUGHTON MIFFLIN CO.
One Beacon St.
Boston, MA 02108
617-725-5000

Harold T. Miller, chairman; Richard W. Young, president; Robert Janas, executive vice president, educational publishing

Houghton Mifflin is one of the largest el-hi and college publishers, with educational sales of $155.6 million out of total corporate revenues of $189.7 million in 1982; 1983 revenues were running 17% ahead of that level. HM's electronic publishing activities encompass test scoring, instructional management software and new microcomputer applications software for schools and business. Two examples are its "Dolphin Computer-Based Instruction," an instructional management program that helps teachers provide individualized study programs in reading and math, and "Keystrokes," a computerized typing program. Other software titles are available to accompany HM texts in algebra, geometry and precalculus.

HM has developed computerized lexical data bases growing out of its American Heritage Dictionary, and has licensed advanced spelling checkers to 15 manufacturers, including NEC, Digital Equipment and Hewlett-Packard. In November 1983 it licensed MicroPro to use its software in "SpellStar," an arrangement that guarantees Houghton at least $5 million in royalties. The company may also adapt some of its educational and dictionary programs to enter the consumer and business markets under its own name.

INFOCOM INC.
55 Wheeler St.
Cambridge, MA 02138
617-492-1031

Albert Vezza, chairman; Joel Berez, president; Marc Blank, vice president, product development; Michael Dornbrook, product manager

Infocom's extensive line of text adventure games (or "computer novels") dominate that sector of the entertainment software business. Its bestselling "Zork I" program has sold over 250,000 copies in four years; "Deadline" has sold 75,000 in two years. Overall, Infocom sold 250,000 units in 1983 for revenues that were between $5 million and $6 million. One measure of the staying power of its programs is that as of late 1983, five had been on the Softsel Hot List for more than six months.

Infocom's proprietary development system allows games to be created on a DEC 2060 and downloaded to various micros, with a minimum of conversion problems. Games all operate in conversational English: players converse with the computer in full sentences. Game creators are writers, not programmers; the four major authors are David Lebling, Stuart Galley (both owners of Infocom), Michael Berlyn and Steven Meretzky.

Games are priced at $39.95 to $59.95 and cover 16 different computers. Infocom reached agreement with Addison-Wesley in late 1983 for A-W to distribute various programs to bookstores.

INNOVATIVE SOFTWARE
9300 W. 110 St., Suite 380
Overland Park, KS 66212
913-383-1089

Michael J. Brown, president; Mark R. Callegari, vice president

Innovative Software designs, sells and supports business-oriented applications programs for IBM PC and PC-compatible microcomputers, as well for the Osborne I, the Victor 9000 and the Wang PC. The company was founded in 1980 and sales in its fiscal 1983, ending June 30, were $1.7 million, with net income of $209,000. The company went public in September 1983, raising about $4.4 million from sale of 530,000 common shares. Its plan was to sink $2.5 million of these proceeds into advertising and promotion of its programs over the next 12 months.

As of June 1983, Innovative Software employed 16 people. Most of its software titles are developed by outside contractors in return for an advance against royalties. Under its Executive Series, IS offers data base and file management programs such as "Fast Facts" and "T.I.M." at $295 and $495, as well as a color graphics program, "Fast Graphs," at $295. In the fourth quarter of 1983 it planned to introduce integrated programs under the common name, "The Smart..." in word processing, data base management and spreadsheet analysis. Expansion of its work force and increased advertising and promotion costs caused a substantial loss in the first quarter of its fiscal 1984, ending September 30, 1983.

LOTUS DEVELOPMENT CORP.
161 First St.
Cambridge, MA 02142
617-492-7171

Mitchell D. Kapor, president; Palmer True, vice president, operations; Marvin L. Goldschmitt, vice president, business development; David K. McElfresh, vice president, product development; Dale Troppito, vice president, software development; James Manzi, vice president, marketing and sales

Lotus Development Corp. was organized in April 1982 to create and market microcomputer software. Before beginning operations it raised more than $4 million in venture capital funds through Sevin Rosen Funds. Lotus released its first product, "1-2-3," in early 1983, and it immediately became a bestseller; as of August 1983, more than 60,000 units had been sold. Lotus' revenues in its first nine months exceeded $29 million and were projected at more than $45 million for all of '83. In October 1983, Lotus sold 2.6 million shares of common stock at $18 per share.

Lotus' initial product, "1-2-3," is an integrated business software program offering spreadsheet, graphing and data base management functions. Besides the IBM PC and IBM-compatible machines such as COMPAQ and Texas Instruments, versions for Digital Equipment Corp.'s Rainbow and the Wang Professional computers were scheduled for the second half of 1983. Lotus' heavy advertising and promotion budget (more than $2 million in 1983) was an important element in the successful launch of its product.

MANAGEMENT SCIENCE AMERICA(MSA)/PEACHTREE SOFTWARE
3445 Peachtree Rd., NE
Atlanta, GA 30326
404-239-2000

John P. Imlay Jr., chairman, MSA; William M. Graves, president, MSA; Dennis Vohs, president, Peachtree; Julian Puckett, vice president, marketing

Management Science America is the largest supplier of mainframe applications software in the U.S., and since its acquisition of Peachtree Software, a leading participant in the microcomputer software market as well. MSA has licensed approximately 8500 software packages for use on mainframe computers at banks, insurance companies, manufacturers and others.

MSA acquired Peachtree Software in June 1981 for 444,424 shares of common stock (worth about $4.5 million), plus the payment of $454,000 to retire certain debentures. Peachtree's product line encompasses word processing; accounting functions such as general ledger, sales invoicing and accounts payable and receivable; and electronic spreadsheets. MSA also offers software packages like "Executive Peachpak II" that link microcomputer users to their company's mainframe. In a further extension of its microcomputer software activities, MSA acquired Edu-Ware Services, Inc., a publisher of educational software, in July 1983 for $1.5 million.

Peachtree contributed $21 million of MSA's $145 million in 1983 revenues, an increase of nearly 150% from 1982 sales of $9.4 million.

MCGRAW-HILL INC.
1221 Ave. of the Americas
New York, NY 10020
212-512-2000

Joseph Dionne, president, McGraw-Hill Inc.; Donald Fruehling, president, McGraw-Hill Book Co.; Peter Bradley, executive vice president, Book Co.; Joseph Kasputys, president, Data Resources Inc. (Lexington, MA); Donald C. Cook, president, Aardvark Software (Milwaukee, WI)

With revenues of more than $1 billion in 1982, McGraw-Hill is one of the two largest publishers of business information in the U.S. Its divisions span books, magazines, TV stations, financial information (Standard & Poor's), construction data (F.W. Dodge) and economic information services (Data Resources). M-H acquired Aardvark Software Co. in June 1983.

Besides Aardvark, three different Book Co. divisions--Gregg, College, and Professional & Reference--produce software. Courseware ranges from a full college course in economics (a 10-disk package to sell for more than $500), to "Profit & Loss," a simulation for business planning priced at $99. Aardvark publishes for a specific market segment--accountants and tax lawyers. It offers "Professional Tax Planner" and "Estate Tax Planner," and was developing "Personal Tax Planner" for the consumer market. In cooperation with VisiCorp Data Resources has developed "VisiLink," which allows personal computer owners to tap DRI's mainframe computer over phone lines and to manipulate the data using "VisiCalc." M-H plans to issue more than 100 software titles in 1984.

MICROPRO INTERNATIONAL CORP.
33 San Pablo Ave.
San Rafael, CA 94903
415-499-1200

Seymour Rubinstein, chairman; Glenn Haney, president and chief executive officer; Frank P. Frost, vice president, domestic sales; William G. Crowell, vice president, product management and development

MicroPro was founded in 1978 by Seymour Rubinstein. It is best known for "WordStar," the bestselling word processing program which had sold more than 800,000 copies as of the end of 1983.

Rapid expansion of support staff and marketing personnel got MicroPro into financial difficulties in 1982, but the company reorganized, cut back and regained its footing. In September 1983, the company hired Glenn Haney, an ex-Sperry computer executive, as its chief executive officer, in preparation for a public stock offering at some point in the future. Company revenues were estimated at $45 million in fiscal 1983.

As of November 1983, MicroPro employed 400 people worldwide, of whom 100 worked in research and product development. The marketing staff included more than 100 people in 20 U.S. and six European sales offices. MicroPro's WordStar family of products, including a spelling checker and a mailing list program, accounts for the great bulk of company revenues. As of November 1983, "WordStar" had been on the Softsel Hot List for 61 weeks.

MICROSOFT CORP.
10700 Northup Way
Bellevue, WA 98004
206-828-8080

William Gates, chairman; Jon Shirley, president; Paul Allen, executive vice president; Steve Ballmer, vice president, marketing; C. Rowland Hanson, vice president, communications

Microsoft is one of the largest of the independent microcomputer software producers. The company was founded by its present chairman, William Gates, in 1975. Its version of BASIC, MBASIC, is widely used and accounted for all of Microsoft's revenues in its early years. The language is still a significant but declining portion of revenues. Microsoft is today best known as the systems software house which produced MS-DOS, the operating system for the IBM PC and for other 16-bit microcomputers. More recently, however, Microsoft has moved into applications software such as "Multiplan" and "Microsoft Word."

Besides software, Microsoft produces and sells a variety of accessories, such as system cards and "softcards" for the IBM and Apple computers.

Microsoft has a staff of 250 program developers working in operating systems, languages and applications. New product releases range from a low of five to a high of 35 new titles per year. Revenues in calendar 1983 were estimated at $70 million for the privately held company, double the previous year.

MILLIKEN PUBLISHING CO.
1100 Research Blvd., PO Box 21579
St. Louis, MO 63132-0579
314-991-4220

James E. Crawford Jr., president; Ernest Marx, vice president

Milliken, a privately held company founded in 1960, began its computer products division in 1978. It currently ranks as one of the largest producers of microcomputer software for schools, claiming that it has 30% penetration of schools with micros. Software is concentrated in math, language arts and reading; programs are designed for individualized instruction and require little direct teacher supervision. Programs were initially available for the Apple II family, which still accounts for the largest sales, but now cover a wide range of machines. Individual programs are priced as low as $33, and series go as high as $700.

Current bestsellers include "Math Sequences," a comprehensive elementary math curriculum that is available in 10 versions priced at $200 to $675, and "Reading Comprehension," which is available in three different levels of difficulty. A new series of educational games, Edufun!, includes "Mathfun!" and "Wordfun!" The Edufun line includes home entertainment/educational programs priced at $32.95 and available through Softsel and other distributors.

Microcomputer software is estimated to account for $1.5 million to $2 million of Milliken's annual sales of $15 million.

MINNESOTA EDUCATIONAL COMPUTING CONSORTIUM (MECC)
3490 N. Lexington Ave.
St. Paul, MN 55112
612-638-0600

Kenneth Brumbaugh, executive director; Richard Pollak, director, special projects; Ronald Barnes, director, marketing; Don Rawitsch, director, user services

MECC began as a statewide task force established in 1972 to provide computer services to students, teachers and administrators. MECC's current involvement with computers includes development and distribution of microcomputer courseware; microcomputer purchase contracts; and technical assistance through timesharing and other services. In November 1983, MECC was mentioned in a U.S. Small Business Administration Report as an example of possible unfair competition for for-profit firms from not-for-profit organizations; MECC denied its activities constitute any such unfair competition.

In June 1983, MECC announced completion of 26 instructional modules designed to teach computer literacy to junior high school students. Programs are available for Apple and Atari computers, and IBM conversions are expected in the first quarter of 1984. MECC programs are available for general sale, though consortium members get substantial discounts. MECC also acts as a developer of software for commercial publishers like Scholastic. In fiscal 1983, MECC had estimated revenues of $800,000; it was anticipating a 50% increase in units and dollars for fiscal '84.

MUSE SOFTWARE
347 N. Charles St.
Baltimore, MD 21201
301-659-7212

Ed Zaron, president; Peter Varvaris, executive vice president; George Rayme, vice president, marketing and sales; Don Awalt, director, software development

Led by the bestselling "Castle Wolfenstein," Muse topped $6 million in revenues in 1983. By the end of 1983 it had sold about 75,000 copies of "Wolfenstein," with a burst of shipments resulting from the Commodore 64 version released in October '83. Two other programs, "Know Your Apple" and "Know Your Apple IIe" had combined sales of 25,000 through October.

In addition to games and educational titles, Muse has a small line of productivity software, including "Super-Text Professional," "Form Letter," "Address Book" and "Data Plot." Most productivity programs are for the Apple, although "Super-Text Professional" is also in IBM, Atari and Commodore 64 versions. Games usually cover Apple, Atari, IBM and Commodore 64. Productivity programs range in price from $99 to $175, whereas most of the games are around $30.

Muse employs 35, of whom nine are programmers, and also publishes titles from outside authors. It sells through distributors, directly to retailers and via mail order catalogs to consumers.

PERFECT SOFTWARE, INC.
702 Harrison St.
Berkeley, CA 94710
415-527-2626

Duncan Lindsey, co-chairman; Robert Glidden, co-chairman; Buck Lindsey, chief executive officer; Nick Vergis, vice president, marketing

Perfect Software was founded in 1981 by two brothers, Duncan and Buck Lindsey, along with Robert Glidden. Its first program, a word processing program called "Perfect Writer," was released in April 1982. Since then the company has assembled a family of applications software, including "PerfectCalc," "Perfect Filer" and "Perfect Speller," with list prices of $295 to $695.

As of fall 1983, Perfect Software employed about 100 people, of whom 35 worked in product development. In April 1983, the company received $3 million in venture capital from T.A. Associates, Boston, MA, bringing the total venture capital invested in the company to $3.8 million.

Perfect Software has emphasized software development in-house; it has research facilities in Eugene, OR and Austin, TX in addition to its Berkeley headquarters. Besides the IBM PC, its programs are available for the Apple II, Kaypro, Columbia Data Products and other computers. Perfect Software has put heavy emphasis on OEM sales, which accounted for an estimated 60% of revenues in 1983. Revenues were estimated at $8 million in fiscal 1983.

PRENTICE-HALL INC.
Englewood Cliffs, NJ 07632
201-592-2000

Frank J. Dunnigan, chairman; Donald A. Schaefer, president, chief executive officer; David Amerman, group vice president

Prentice-Hall's two strengths are its college textbook division, the largest and most profitable in the industry, and its business and professional publishing activities, including the largest computer book program.

Eight different P-H divisions produce microcomputer software, usually from outside developers. In October 1982, Prentice-Hall acquired Software 1040 Inc., whose two major titles, "Software 1040" and "Plan 1040," run on IBM minicomputers and on various micros. Software 1040 maintains its own staff of 20 programmers and 15 accountants working on program development.

One P-H subsidiary, Reston Publishing, does software for the IBM PC, Apple, Atari, Commodore and Timex-Sinclair computers. Brady's efforts include games and a business graphics program for the IBM PC. The College Division does book/diskette titles as well as stand-alone software. Two major series introduced by P-H in late 1983 and early 1984 were "The Profit Center," consisting of 21 modules in business and accounting developed by Orchid Software (Austin, TX) and "Execuvision," a presentation graphics program. Software was less than $1 million of P-H's $425 million in 1983 revenues; it could be more than $5 million in '84.

RANDOM HOUSE INC.
(subsidiary of S.I. Newhouse & Sons)
201 E. 50 St.
New York, NY 10022
212-751-2600

Robert Bernstein, chairman; Anthony Schulte, executive vice president; George Rosato, vice president and general manager, School Division

Long a leader in hardcover trade publishing, and a major mass market paperback publisher through Ballantine Books, Random House has only recently expanded in computer book publishing. However, its software activities date back to 1981. Early software products were TRS-80 programs, although current titles are available for Apple, IBM and Atari computers as well.

In 1983 RH had more than 200 software titles available in the education market, at prices ranging from $39 to $798; in 1983, it released its first two consumer titles, "Shifty Sam" and "The Game." Between 24 and 30 consumer programs are scheduled for release in 1984. Bestsellers for schools are "Galaxy Math Facts" (elementary), priced at $147, and "Mechanics of English" (secondary).

Random House maintains one of the larger software development staffs, employing 50 developers, designers and illustrators; products are sold by mail and by the school sales force. Annual sales for Random House exceed $150 million, with its School Division accounting for about $12 million.

READER'S DIGEST

Microcomputer Software Division
Pleasantville, NY 10570
914-769-7000

John O'Hara, chief executive officer, Reader's Digest; Richard Scott, director, Educational Division and Microcomputer Software Division; Dale Sneeringer, marketing director, software; Ellen Smith, software manager

Reader's Digest, a privately held company founded by the late DeWitt Wallace and his wife, Lila Acheson Wallace, is one of the largest publishers in the world; Reader's Digest magazine has a U.S. circulation of about 18 million and worldwide circulation of 30 million. Its Educational Division publishes print and audiovisual materials for schools, and the Microcomputer Software Division was started as an offshoot of the Educational Division.

In 1983 the Microcomputer Software Division redirected its efforts from relatively high-priced classroom software to learning programs for the home. The new line, introduced at the Winter Consumer Electronics Show in January 1984, runs the gamut from age three and a half to adult. Machine formats include Apple, Commodore 64 and IBM PC.

Programs are developed by outside authors. Consumer programs sell for $35 to $50; school titles run $50 to $100. Software revenues were not significant in 1983 for the Digest, which has worldwide revenues of $1 billion; Educational Division revenues are estimated at about $7 million.

SCARBOROUGH SYSTEMS

25 N. Broadway
Tarrytown, NY 10591
914-332-4545

Francis P. Pandolfi, president; Michael A. Brennan, vice president, general manager; Sanford Baine, vice president, marketing; Glenn Polin, product development; Peter DuPont, vice president, sales

With the acquisition of Lightning Software (Palo Alto, CA) and its top selling "Master Type" series, Scarborough entered the entertainment-education market in a big way in the second half of 1983. Its four series are arts, math games, business simulation and home productivity programs. First program in the latter series is "Phi Beta Filer," at $49.95.

A major print advertising campaign began in late '83 in trade and consumer computer magazines. Scarborough reports sales increased dramatically for "Master Type" (over 100,000 copies sold since release, with three quarters of the total in 1983) and for new releases. Based on distributor reorders for "Song Writer," Scarborough projects sales of 50,000 to 65,000 in 1984.

Although some software is developed internally through Lightning, most is contracted from outside programmers, such as a math series coming in 1984 from Intentional Education (co-developer of "Bank Street Writer") and a business simulation series from Tom Snyder, creator of "Snooper Troops." Royalties are generally 15% of net sales. Scarborough says '83 revenues topped $1 million.

SCHOLASTIC INC.

730 Broadway
New York, NY 10003
212-505-3000

Richard Robinson, president; Richard Krinsley, executive vice president; Deborah Kovacs, creative director, software development; Carol Bunevich, marketing director, software; Stephen Gass, project manager, software

Scholastic, the largest publisher of classroom magazines and operator of school book clubs, has committed itself to substantial expansion in computer print and software publishing as part of a general expansion in the consumer market. Most of Scholastic's $112 million in fiscal '83 revenues (ended May 31) came from school sales of magazines and books.

The first four programs in its Wizware line were shipped in May 1983. Besides such titles as "Square Pairs" and "Electronic Party," which contain learning activities and games aimed at elementary school-aged children, Scholastic also released "Microzine," a magazine on diskette. Titles retail for $29.95 on cassette and $39.95 on disk; formats include Apple, Atari, Commodore 64 and IBM PC. Scholastic's other major software project in 1983 was the school version of "Bank Street Writer," which had sold approximately 15,000 copies by year-end. Software from other publishers is also sold via catalog mailings to schools. Scholastic planned to introduce 20 new software titles during 1984. Software is developed both by contract programmers working at Scholastic and by independent authors such as Tom Snyder.

SFN COMPANIES INC.

1900 East Ave.
Glenview, IL 60025
312-998-5800

John R. Purcell, chairman; Richard Roberts, president, Scott, Foresman; C. Lemoyne Smith, president, South-Western Publishing (Cincinnati); Pat Donaghy, president, Silver-Burdett (Morristown, NJ); Roger Buoy, president, SFN Electronic Publishing Co.

SFN Companies is the largest el-hi textbook publisher and one of the largest college publishers in the U.S., through its subsidiaries Scott, Foresman, South-Western and Silver Burdett. SFN has moved into informational publishing by acquiring New York Law Publishing Co., Broadcast Advertiser Reports, and Biomedical Information Corp., as well as a 25% interest in ATI, a producer of training software. To coordinate its software and data base publishing activities, SFN formed the Electronic Publishing Co. division.

SFN's software products encompass school, home and professional products, and accounted for $3.1 million in revenues (out of a company total of $227 million) in its fiscal 1983. Scott, Foresman's elementary reading and mathematics courseware modules for the TI 99/4A have sold well. South-Western offers accounting and typing software and distributes popular software titles from Continental Software, producer of the "Home Accountant," and from ATI. The new Electronic Publishing Co. employs 75 people, with about 20 working in programming and another 20 in editorial.

SIERRA ON-LINE
Sierra On-Line Building
Coarsegold, CA 93614
209-683-6858

Kenneth Williams, president; Roberta Williams, creative consultant; Bruce McDonnell, vice president, marketing; Rick Davidson, director, product development

Sierra On-Line began as an outgrowth of Roberta Williams' imagination. Husband Kenneth, a programmer, turned Roberta's story into a text/picture adventure game for Apple II computers; "Mystery House" has sold 70,000 copies since its release in 1980, making it one of the bestselling computer text games. In the same period, Sierra On-Line has grown from a cottage business in the Williams' living room to a firm employing 110, with 25 in-house programmers. Revenues in 1983 were $12 million, up 20% from the $10 million achieved in 1982.

From the text/graphic genre of "Mystery House," Sierra has expanded into arcade style games; its bestseller, "Frogger," has sold 160,000 copies to date. Its newest venture is home productivity software. Its "Homeword" word processor was adopted by IBM for the PCjr.

Sierra both develops programs in-house and acquires them from outside authors, usually for a royalty of 15% to 16%. The company had 90 programs on the market as of year-end 1983, with 90 to 100 due in 1984.

SOFTWARE ARTS
27 Mica Lane
Wellesley, MA 02181
617-237-4000

Dan S. Bricklin, chairman; Robert Frankston, president; Julian E. Lange, executive vice president; Tracy Licklider, vice president, operations

Software Arts was founded in 1979 and in 1983 employed 120 people, most of whom work in new product development. Its founder, Dan Bricklin, is best known as the creator of "VisiCalc," which has had a sweeping impact on the way business calculations are performed, as well as on the evolution of the personal computer industry. The marketing rights to "VisiCalc" are held by VisiCorp (formerly Personal Software) and as of October 1983, VisiCorp and Software Arts were suing one another over issues of royalties and mutual obligations under their contract.

Software Arts, meanwhile, has begun its own software publishing program with the release of "TK!Solver," priced at $299, in 1983. The program is used by engineers, scientists and business people to solve equations. Also available are "TK!SolverPacks" giving models, including equations, for specific fields like financial management or engineering. These SolverPacks are priced at $100 each.

Even with the release of its own programs, however, most of SA's revenues continue to come from royalties from the sale of "VisiCalc."

SOFTWARE PUBLISHING CORP.
1901 Landings Dr.
Mountain View, CA 94013
415-962-8910

Fred Gibbons, president; John Page, vice president, research and development; Janelle Bedke, vice president, marketing; Signe Ostby, marketing manager

Software Publishing Corp. was founded in 1980; it produces microcomputer programs for the Apple, IBM and IBM-compatible personal computers. Its first program, "PFS:File," has been an outstanding success, selling more than 200,000 copies as of the summer of 1983. List price is $140 for the IBM PC version. It was followed by companion programs providing reports and graphics. In mid-1983, SPC introduced its word processing program, "PFS:Write." SPC estimated in September 1983 that approximately 250,000 customers were using its programs.

The company employed approximately 100 people as of fall 1983. It maintains an active customer support department to assist dealers and end users in using its programs. Marketing is through distributors and directly to dealers; SPC spends 15% of sales on advertising and promotion.

Software Publishing has concentrated on easy-to-use software products with relatively modest prices. Its revenues were $10 million in the fiscal year ended September 30, 1983, and the company was expecting to double sales in fiscal '84.

SOFTWORD SYSTEMS INC.
52 Oakland Ave., North
E. Hartford, CT 06108
203-522-2116

I.J. Ikavalko, chairman; Will Jones, president; Fred Bouchard, vice president, marketing; Mike Wiggins, manager, research and development

Softword Systems was founded in early 1982 with a handful of employees. By fall 1983 it had grown to 135 employees and was shipping more than $1 million per month of its only product, a word processing program for the IBM PC called "Multimate." "Multimate" was developed for Connecticut Mutual Life Insurance Co., which wanted a program for the IBM PC that would emulate the features of its Wang system. Once the program was delivered, in July 1982, Softword set about offering it for general sale, which began in spring 1983.

Through September 1983, Softword had shipped 31,000 copies of "Multimate" and was selling as many as 6000 per month. The company maintains that "Multimate" is among the top five bestselling word processing programs for the IBM PC.

Softword Systems has an in-house development staff of 40 working on improvements to "Multimate" and new products. The company stresses technical support and provides free updates to the program within 180 days of customer purchase. Company revenues were estimated at more than $5 million in the fiscal year ending in March 1984.

SORCIM
2310 Lundy Ave.
San Jose, CA 95131
408-942-1727

James Pelkey, president; Haldane King, vice president, marketing; William Ferguson, vice president, sales

Sorcim was founded in June 1980 and by October 1983 was employing about 100 people. The mainstay of its product line is a bestselling electronic spreadsheet, "SuperCalc," which has gone through several updates, and which ranks second only to "VisiCalc" among spreadsheet programs in cumulative sales. The company has also entered the word processing market. In fiscal 1983 its sales more than doubled to $10 million, putting it in the ranks of the largest business/professional software publishers.

Sorcim's programs are available for the Apple II, the IBM PC, the Texas Instruments Professional Computer and the NEC professional computer as well as in CPM formats. Its spreadsheet program, "SuperCalc" was introduced in 1981; by October 1983 it had sold 350,000 copies--including copies sold by manufacturers on an OEM basis, making it the third bestselling business software program after "VisiCalc" and "WordStar."

An advanced version of the program, "SuperCalc2" was introduced in early 1983, and a still more advanced version, "SuperCalc3," at the end of the year. This latter product includes data base and graphics capabilities.

SPINNAKER SOFTWARE
215 First St.
Cambridge, MA 02142
617-868-4700

William Bowman, chairman; C. Davis Seuss, president; Jay Mixter, marketing director

Spinnaker is the marketing success story of the home software business. Founded in April 1982, the company will gross over $10 million in its fiscal 1984, ending January 31, 1984, up from $1 million in fiscal '83. Revenue projections for fiscal '85 exceed $40 million.

Unlike many software firms, Spinnaker is headed by executives with a marketing rather than a technical background; Bowman and Seuss are Harvard Business School graduates. Its early programs like "The Story Machine," although not technically advanced, sold well because of the scarcity of consumer educational titles. The next programs, e.g., "Snooper Troops" I and II and "In Search of the Most Amazing Thing," were more advanced, and suitable for adults as well as children. Several titles, e.g., "Facemaker" and "Snooper Troops I" have sold more than 50,000 units. Most Spinnaker programs are licensed from developers such as Tom Snyder Productions and DesignWare.

Rising acquisition and advertising costs have necessitated increased investment. After an initial $800,000 in venture capital from T.A. Associates, another $5 million was raised in 1983 through L.F. Rothschild.

VISICORP
2895 Zanker Rd.
San Jose, CA 95134
408-946-9000

Dan Fylstra, chairman; Terry Opdendyk, president; David Spencer, marketing director; Eugene K. Buechele, director, research and development; Edward Supplee, director, finance

VisiCorp was founded under the name Personal Software when Fylstra was a student at Harvard Business School in 1978. (The name was changed to VisiCorp in early 1983.) Fylstra's company obtained marketing rights to "VisiCalc," developed by a fellow student, Dan Bricklin of Software Arts. This first electronic spreadsheet contributed to the soaring popularity of personal computers. By late 1983, more than 700,000 copies of "VisiCalc" had been sold. Company revenues were $35 million in 1982, rising to an estimated $60 million in '83.

VisiCorp's most ambitious undertaking was its $10 million investment in the "VisiON" series of products introduced in fall 1983. This software uses a hand-held mouse and a series of windows permitting the user to run several applications programs simultaneously, and to carry out various functions of data creation and editing merely by moving a pointer to the desired operation on the screen. Besides "VisiON," other new VisiCorp emphases include: programs for communicating with public and private data bases; a book publishing division, VisiPress; and a training division, VisiTraining.

JOHN WILEY & SONS, INC.
605 Third Ave.
New York, NY 10158
212-850-6000

W. Bradford Wiley, chairman; Andrew H. Neilly Jr., president and chief executive officer; Kenneth B. Collins, vice president, professional group; Robert C. Douglas, vice president, educational group

John Wiley & Sons is an independent publisher of educational and professional books, reference works, journals, and related learning materials. Revenues were $167 million and net income was $9.6 million in its fiscal 1983. Wiley's strengths are its college textbook division and its professional group, both of which are strong in the physical sciences, mathematics, business and economics. Wiley has become a major publisher of computer books and has entered electronic publishing with software and online data bases. Software activities are centered in the professional and educational groups.

The educational group's software activities include packages in chemistry and physics. Software publishing in the professional group is split between lower-priced programs aimed at the mass market, e.g., "Personal Investment Analysis," and highly specialized packages for the business market, e.g., for project management. Most of Wiley's software has been developed by outside authors or software development companies, sometimes to go with a book. Wiley's trade sales force and college sales force market software titles to general and college bookstores and to computer stores.

XEROX EDUCATION PUBLICATIONS

Weekly Reader Family Software Division
245 Long Hill Rd.
Middletown, CT 06457
203-347-7251

Robert Quigley, president; Alex Kushner, vice president, computer software; Fritz Luecke, director, computer software

Xerox Education Publications, a $60 million division of the Xerox Publishing Group, publishes My Weekly Reader and other magazines, runs children's book clubs and publishes audiovisual materials. Its Weekly Reader software division markets educational and consumer software. Programs are developed by outside designers, notably Richard and Olivia Hefter of Optimum Resource Inc. (Norfolk, CT). Optimum created the Stickybear series, featuring imaginative graphics and entertaining learning experiences for young children.

Nine titles were published by year-end 1983, including "Stickybear ABC," "Stickybear Numbers," "Old Ironsides" and "Chivalry." At least 10 were planned for 1984. Titles run only on Apple, but Atari, Commodore 64 and IBM PC versions (including PCjr) are expected in '84. All software is accompanied by story books, parents' user guides and often, posters and stickers. "Chivalry," a combined board and computer game, is $44.95; others are $39.95.

Xerox pays advances against royalties and sells directly to retailers and through distributors. Retail discounts range from 35% to 50%.

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